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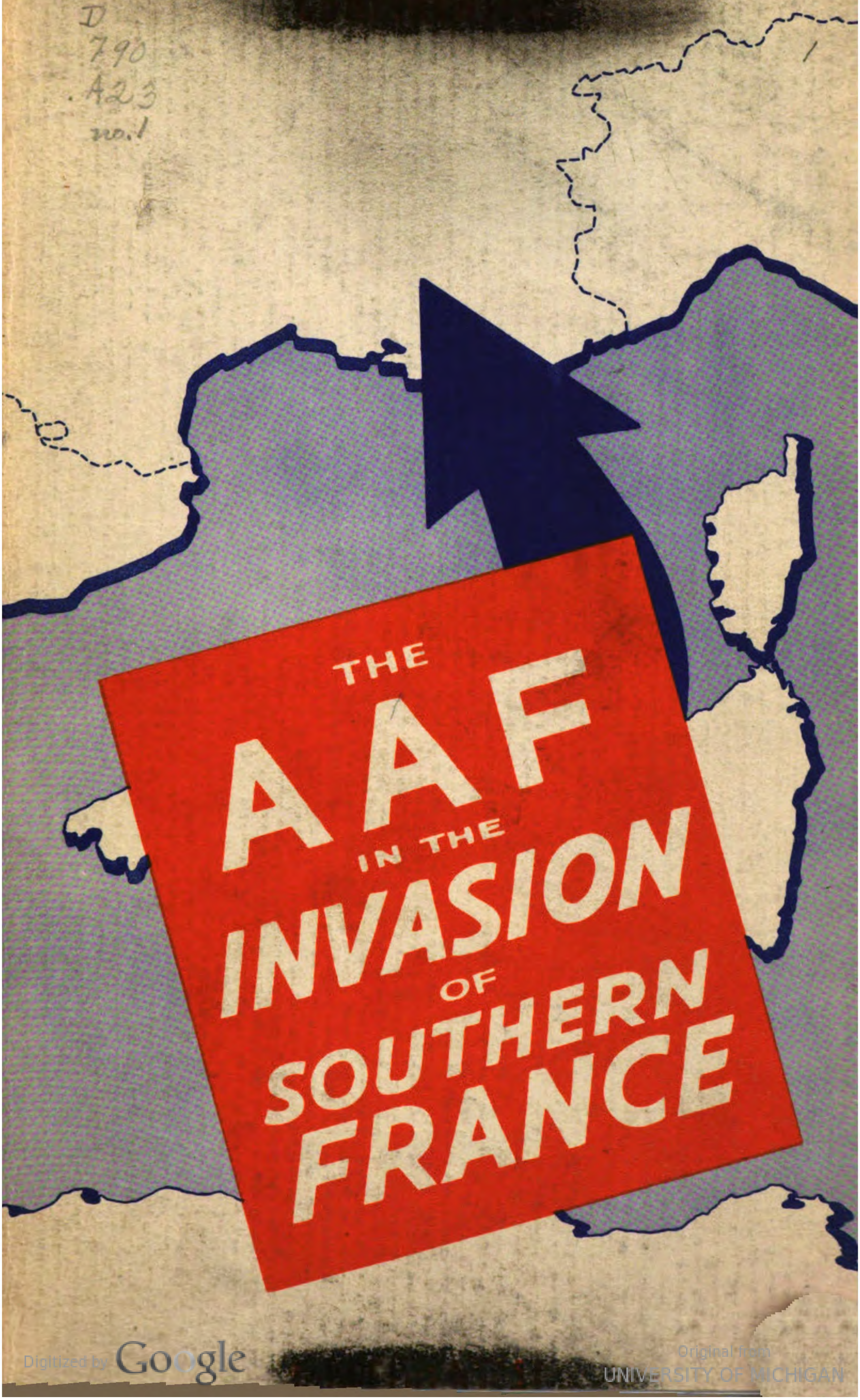

THE AAF IN THE INVASION OF SOUTHERN FRANCE

Wings at War Series, No. 1 [redacted]

The AAF
IN THE INVASION OF
Southern France

An Interim Report

Published by Headquarters, Army Air Forces
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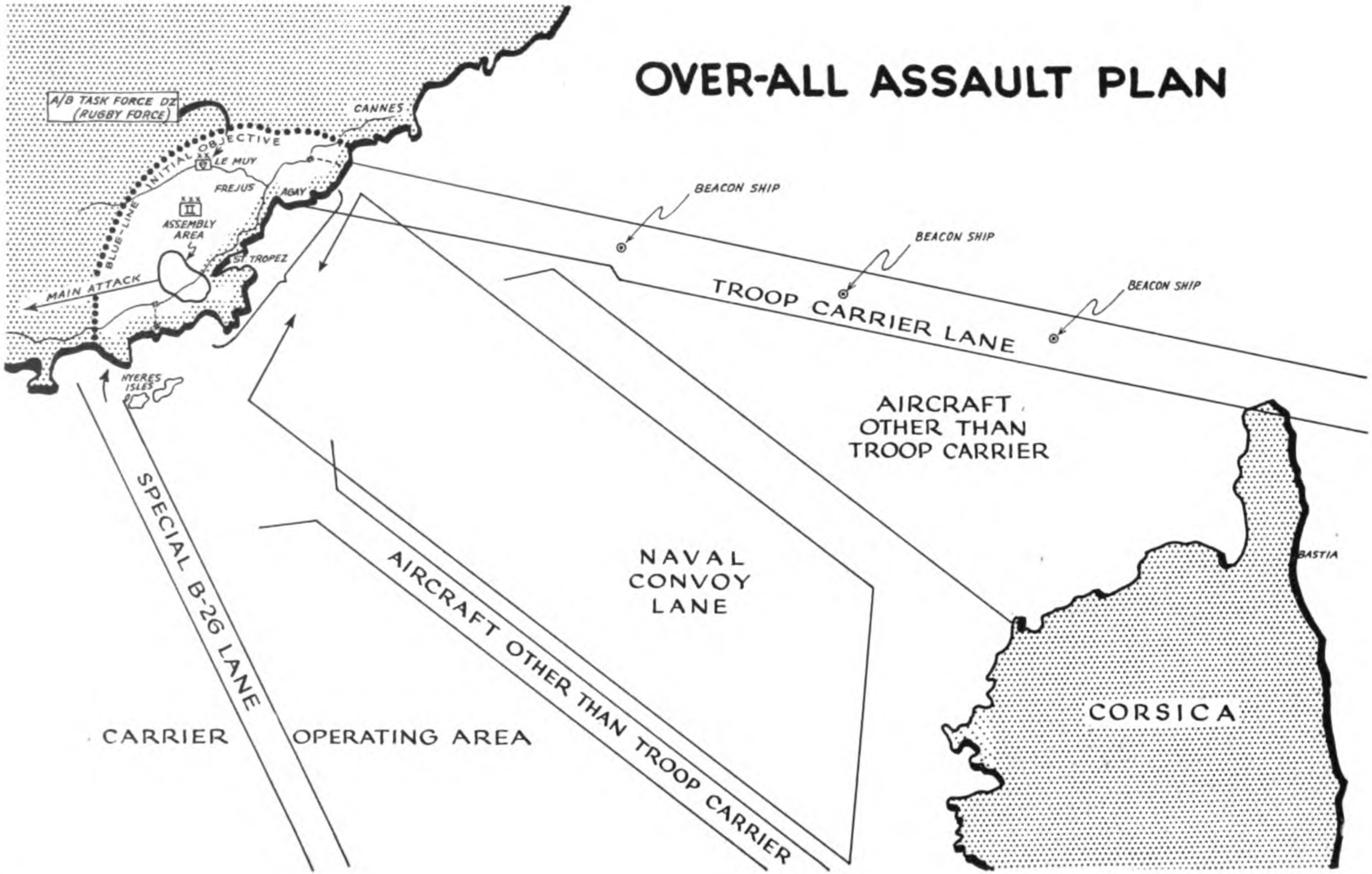
From Reports Prepared by MAAF

OVER-ALL ASSAULT PLAN



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FOREWORD

THIS is the first in a series of combat narratives to be published by Headquarters, Army Air Forces from original documents prepared by the AAF in the theaters. Acknowledgment is made to the Historian, Mediterranean Allied Air Forces, upon whose detailed report covering the invasion of southern France this brief has been based.

While this narrative does not pretend to be a complete or definitive history, it is drawn from official records and firsthand observation and should provide combat personnel with a succinct summary of the planning and execution of air action in this invasion.

These combat narratives are made possible by the conscientious work of staff personnel in the theaters. Complete and fully documented reports of campaigns and individual missions will continue to serve as source material for this series of publications.

Comments and criticisms are invited. They should be addressed to: The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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MAR 25 '47

The Invasion of Southern France

PRE-INVASION SITUATION

WHEN Allied airborne and amphibious troops invaded southern France in the early morning of 15 August 1944, they set in motion the fourth major onslaught against the occupied Continent in 3 months. First blow had been struck in Italy with the Allied offensive which began on the night of 11–12 May and had carried forward some 200 miles to the Pisa-Rimini line, liberating Rome and liquidating at least a dozen German divisions. Second blow had been the cross-channel invasion of Normandy which began on 6 June and had broken the German 7th Army, surrounded most of it, and was on the verge of capturing Paris. Third blow had been the massive Soviet attack across the Pripet Marshes which began on 22 June and had split the Baltic States at Riga, reached Warsaw in Poland, and was poised on the boundaries of East Prussia itself.

This was the picture on 15 August, the date set for invasion.

Thus the new Allied uppercut against southern France found the Germans in a situation which was already desperate. Though the Allied threat to the Riviera had been obvious for months, the hard-pressed Germans had been obliged to pull away a sizable proportion of the forces they had allocated to defend it. Only 10 Nazi divisions remained south of the River Loire and but 7 were actually deployed along the Mediterranean coast. Even more depleted, after a year of strategic bombing by the Allies, was the German Air Force. It was estimated to have in southern France the puny total of 200 operational aircraft, of which 130 were bombers designed for antishipping attacks. It was believed that the Hun might be able to scrape together from Italy and northern France another 50 bombers and 80 single-engine fighters. As for German naval defenses, these consisted of a handful of destroyers and torpedo boats and perhaps 5 U-boats.

Depleted and dispersed though the German defenses were, their capabilities were still considerable. The coast they were guarding is a rugged one, with rocky promontories overlooking the small beaches. The French had long ago established a number of well-sited coastal batteries at the obvious points. These the Germans increased, while they also deployed some 450 heavy and 1,200 light antiaircraft guns in the area, largely along the shore. Finally, there seemed little chance of tactical surprise since the Allied build-up in Corsica was clearly visible to German reconnaissance aircraft.

For the invasion the Allies marshalled a force with a clear-cut and overwhelming superiority in every respect. Against the Luftwaffe's 200 furtive aircraft, the Mediterranean Allied Air Forces could muster 5,000. Against the 7 weak German divisions the United States Seventh Army could throw in a stronger force of crack United States and French divisions, plus an assortment of paratroop, Commando, and Special Service forces. And the dinky German naval units would sally, if they dared, in the face of 450 British, United States, French, and Italian warships, including about 5 battleships and 10 aircraft carriers.

In collecting this mighty array, the Allies had faced two difficult problems: (1) the redeployment of the available ground and air forces so as to be able to hit southern France *without* at the same time hamstringing the advance of the Fifth and Eighth Armies in Italy, and (2) the build-up of primitive, malarial Corsica into a satisfactory springboard for the air participation in the landings. Both these matters are dealt with later. It suffices for this introductory summary of the situation to record that XII Tactical Air Command under Brig. Gen. Gordon P. Saville was charged with the responsibility of providing the air cooperation. By D-day it was effectively installed on 14 Corsican operational airfields, with all supplies needed to maintain about 40 United States, British, and French squadrons, plus some 6 squadrons on loan from the Strategic Air Force. Other elements of MAAF on call from XII TAC were based as follows: Provisional Troop Carrier Air Division—west coast of Italy above Rome; Desert Air Force—North Central Italy; Tactical Air Force's medium bombers—Corsica and Sardinia; Strategic Air Force—Foggia area; Coastal Air Force—scattered throughout area; and, finally, a Carrier Task Force, standing offshore between Corsica and Toulon.

INTENTION

The major purposes behind the operation were (1) to assist the Normandy attack by engaging German forces that might otherwise be used in northern France; (2) to capture a major port through which large-scale reinforcements could flow; (3) to liberate France; and (4) to join up with the cross-channel invasion for the decisive battle with the German armies of the west.

The initial assignment of the Seventh Army, as stated in its Field Order No. 1, was to "assault the south coast of France, secure a beachhead east of Toulon and then assault and capture Toulon." Thereafter its intention was to advance toward Lyon and Vichy or westward to the Atlantic as determined by developments, eventually joining up with the Allied armies in northern France.

The task of the AAF, as stated in MAAF's Outline Plan of 12 July, was as follows:

(*a*) To neutralize the enemy air forces.

(*b*) To provide air protection to the assault convoys, the assaults, and to subsequent operations.

(*c*) To prevent or effectively retard movement of enemy forces into the assault area.

(*d*) To assist the assault and subsequent operations of the ground forces by air action.

(*e*) To transport and drop airborne troops engaged in the operation.

(*f*) To cooperate with the Maquis by air action and air supply.

In addition MAAF had all its regular commitments to work with the armies in Italy and to conduct strategic bombing of German priority objectives and special operations in aid of the Partisans.

PLANNING

As far back as 1 April 1943 the eyes of the Allied forces in the Mediterranean were focusing on a possible landing in southern France. By 9 December 1943, the scheme had reached the point of decision, and a directive was issued to General Eisenhower to the effect that it would take place in May. Intensive planning began at once in accordance with Allied Force Headquarters directive of 29 December. On 4 February the combined planning staffs of Air, Army, and Navy met to compare views and on 31 March the first Provisional Outline Air Plan was issued.

Shortly thereafter, however, the stalemate in Italy forced a recasting of plans, and it was decided to shelve the plan and concentrate on a decision in the battle for Rome. The battle began on 11–12 May and almost immediately inflicted a shattering defeat upon the German armies. The Allies had just captured Rome and were in all-out pursuit of the disorganized enemy during early June when the Normandy assault began; it was clearly inadvisable to halt in the middle of success in Italy to invade southern France.

Not until the end of the month was the decision to execute the program finally made. By then the Allied armies in Italy had largely exploited their success and were slowing down in front of the formidable Pisa-Rimini defense line. And in Normandy, though Cherbourg had been taken and the beachhead secured, the Allied armies were temporarily stalled and had fallen definitely behind schedule. Action was wanted and wanted quickly. Most of the high command in the Mediterranean would have preferred to concentrate on advancing the rest of the way up Italy and thence into the Hungarian plain. However, on 2 July invasion was decided upon, with direction that it be launched on 15 August. Gen. Sir Henry M. Wilson had already, on 28 June, approved the Outline Plans, and on 7 July AFHQ directed that they be put into effect.

MAAF's Outline Air Plan, which was issued in final form on 12 July in compliance with this directive, laid down the broad tasks and assigned the control of operations as follows:

> (*a*) C. G., Tactical Air Force, in addition to present responsibilities, to be responsible for detailed planning, for conduct of intruder operations, for protection of all convoys within 40 miles of the beaches until assumption by A. O. C., MACAF of responsibility for the defense of southern France, for Air Sea Rescue in the assault area and for organizing and directing Troop Carrier operations.
>
> (*b*) A. O. C., Coastal Air Force, in addition to present responsibilities, to be responsible for defense of all convoys to within 40 miles of the beaches, for special overseas reconnaissance, antisubmarine work, etc., and for Air Sea Rescue outside the assault area.
>
> (*c*) C. G., Strategic Air Force to be responsible for help as required by C. G., MATAF, such requests to be passed on by Hq. MAAF.
>
> (*d*) C. G., XII Tactical Air Command to be in control, under C. G., MATAF, of all tactical units operating in the assault area, including carrier-borne aircraft.

(*e*) C. G., AAF Service Command to be responsible for supply of all units in Corsica.

(*f*) C. G., AAF Engineer Command to be responsible for developing airfields in Corsica and southern France.

Following this directive from MAAF, each of the three major units involved—Strategic, Coastal, and Tactical Air Forces—produced its own plan for its share of the invasion. In the case of Strategic and Coastal, the operation posed no major problems, calling for little more than normal performance of routine tasks. Upon Tactical fell the major burden of the job and its commander, Maj. Gen. John K. Cannon, besides planning the actual assault operations, had to reorganize his entire air force and occupy the new bases in Corsica. As of June 1944 MATAF was a joint command composed chiefly of the British Desert Air Force and the U. S. Twelfth Air Force. TAF was functioning entirely in cooperation with the Fifth and Eighth Armies in Italy, whose advances had been made possible by its spectacularly successful interdiction of German supply lines. General Cannon's problem was to keep enough air power behind General Alexander to enable the Fifth and Eighth to continue their advance and at the same time muster adequate striking force for the assault on France. He solved it by leaving to Desert Air Force the cooperation with the armies in Italy and moving XII Tactical Air Command (a hybrid outfit consisting chiefly of fighters and fighter-bombers) to Corsica. MATAF's two medium bomber wings were kept separate, available to help either Desert Air Force or XII TAC as occasion arose. These arrangements were promulgated on 7 July in MATAF Operations Instruction No. 2. MATAF's Outline Plan, issued the next day, made provision for the operations of troop carrier units being borrowed from England and called upon XII TAC to prepare the final detailed assault plan. This was issued as Operations Order No. 1 on 8 August, while the over-all MATAF bombing plan appeared as Operations Instruction No. 3 on 4 August.

Plans contemplated the use of airborne troops. Since the Mediterranean theater had been largely stripped of troop carrier units for Normandy, it was necessary to borrow them back again from England. Accordingly, dispositions were made as described in the section on the airborne phase of the operation, which appears later.

Supplies—Corsica

When the scheme was first approved at the end of 1943 with a target date of late May, an immediate survey was instituted to ascertain how many airdromes could be constructed there and how many groups could be supported. Simultaneously exhaustive study began on the signals and communications requirements. It was at once obvious that a difficult logistic and construction job was in prospect. This was energetically pushed throughout the spring and not allowed to lag even during the months when invasion was on the shelf.

There were only two ports on the island. Ajaccio, with a capacity of 3,000 tons a day, could accept one Liberty ship at a time providing the draft was not more than 22 feet. Bastia could accept 2,000 tons a day by coasters or other small vessels. However, Bastia could not be used because the Germans were mining the channel nightly. The terrain in Corsica made it imperative to build practically all operational airdromes on the east coast.

No internal transportation existed. Every railroad bridge on the east coast had been demolished. Bridges and tunnels on the cross-island route from Ajaccio to Bastia had been destroyed. It was evident, therefore, that our forces would have to rely on their own transportation facilities for the movement of supplies in Corsica, and that the build-up of any considerable operation would have to proceed gradually over a period of months. The following steps were taken:

A small artificial port was constructed, Portovecchio, capable of receiving 200 tons a day in very small vessels.

A build-up was immediately begun at Ajaccio on the east coast, and shipments were made to east-coast airdromes as they were constructed, by LCT, supplies for the most part in the early stages being offloaded over the beaches. This was alleviated somewhat at a later date when the Navy agreed to take LCT's into Bastia.

A gasoline pipeline was constructed from Portovecchio to Bastia with a reversible pumping system so that the line could be operated from both ends. This pipeline had a capacity of 45,000 barrels daily; 111,000 barrels for bulk storage were erected on the island; 59,000 barrels for bulk storage already existed on the island of Maddalena. This storage was kept full as a readily available reserve. In addition, 100,000 barrels in tankers were kept at Maddalena as floating storage for immediate call forward.

Personnel build-up into Corsica had started months before with the accumulation of supplies, which proceeded over a period of approximately 3 months. By 15 May, all elements of Coastal Air Force scheduled for Corsica were on the island, as well as a bombardment wing of the Twelfth Air Force, together with certain elements of an RAF wing, constituting a coastal air force of offensive striking power. In addition to the above forces, the operation called for the XII Tactical Air Command, reinforced by some French squadrons and some RAF squadrons, as the main assault force. All of these forces were actively engaged in cooperation with the armies in Italy until D minus 20. This entire assault force was moved into Corsica in an 8-day period, without any cessation in operations. This move was accomplished by dividing each squadron into advance and rear echelons, and by the use of an LST ferry lift.

The estimated requirement in bombs alone was 52,000 tons. This build-up was accomplished by bringing Liberty ships into Cagliari, where the supplies were transshipped into coasters, the coasters discharging along the east coast of Corsica. While the supply position of Corsica has always been precarious, presenting difficulties of arranging transhipments and meeting convoy schedules and offering only limited port capacity, the objective was met in every respect.

Airdrome construction—Corsica

The initial reconnaissance of existing airfields and sites for new ones was made in the early part of October 1943 while fighting was still going on and the northeastern corner of Corsica was under German control. At that time there were two existing small airfields which could be considered operational: Ajaccio and Calvi, on the west side of the island. The original airfield program called for the improvement and enlargement of these two fields. In addition, the repair, improvement, and enlargement of Ghisonaccia and Borgo on the east side and two new fair-weather sites for the Coastal Air Force were to be provided. This program was expanded to meet the important needs of the Tactical Air Force. On 10 August there were 14 operational airfields, all-weather and semi-all-weather, available for use by fighters, fighter-bombers, and medium bombers. Eighteen groups of tactical aircraft could readily be accommodated.

During early construction operations the employable aviation engineer units varied from a minimum of half a battalion to two and one-half battalions at a maximum. Higher priority airfield requirements in Italy, North Africa, and other parts of the theater prevented the assignment of additional units and retarded their early release from other projects. French units and civilian labor, supplemented by U. S. equipment and supplies, performed most of the work at Ghisonaccia and Ajaccio. Italian troops, available from November 1943 to the early part of May 1944, assisted greatly in providing needed hand labor. These troops expedited early completion of new airfields, such as Solenzara and Alesan. With these few units all work was done, including the numerous related airfield installations and projects such as removing mines; construction of radar stations and access roads to gasoline and bomb dumps and water points; elimination of bush and dry vegetation fire hazards; and erection of airfield buildings.

Signals

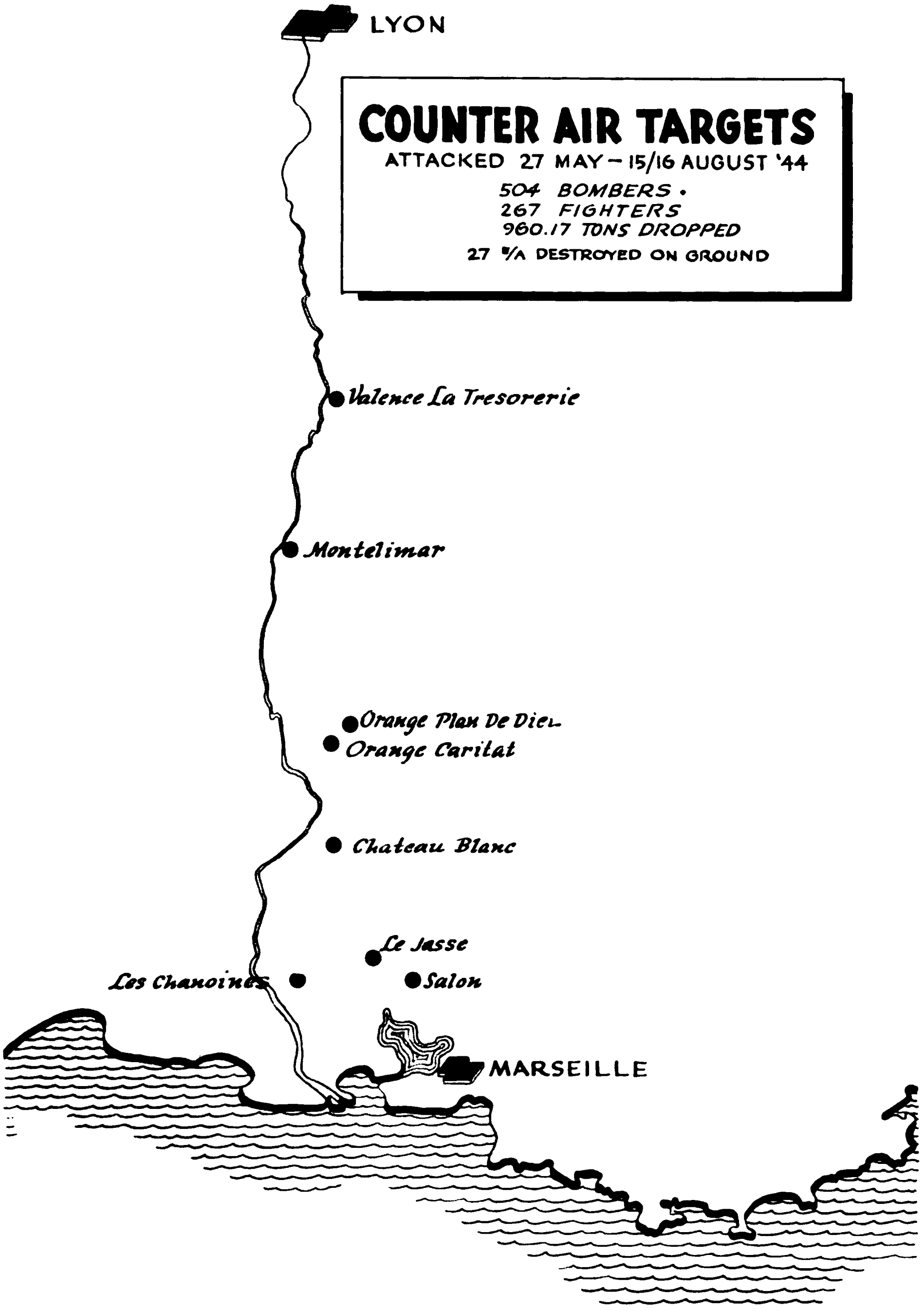
The problems faced by the Signals Planning Staff at Headquarters, MAAF involved not only the creation of a competent communications net on Corsica, but also the control of air operations from fighter direction ships during the assault phase and the speedy development of landline and radio nets in southern France. Perhaps the most interesting detail was the employment of a separate fighter direction ship, rather than use of the headquarters ship itself, to direct the assault air cooperation. The need for such a procedure was one of the major lessons learned at Anzio.

Arrangements were made with the U. S. naval commander in North African waters for headquarters and fighter direction ships and GCI-mounted LST's as follows:

Headquarters Ship
1st Standby HQ Ship
Fighter Direction Ship
1st Standby FD Ship
2d Standby FD Ship
3d Standby FD Ship

Air Sea Rescue Ship
British type 15 GCI mounted on LST 32
British type 8 GCI and American SCR 584 mounted on LST 394

The headquarters ship arrived in Algiers on or about 20 March 1944. Representatives of the MAAF Planning Staff were invited aboard to inspect the facilities. Certain modifications were sug-



gested; the ship then proceeded to Oran, carried out the suggested modifications, returned to Algiers, and participated in the operation. FDT 13, which had been used as a fighter direction ship in the Normandy effort, arrived on or about 3 August 1944. This ship was fitted with United Kingdom communications facilities, which necessitated the changing of the antenna systems to accommodate the

MAAF theater frequencies and the provision of additional channels. These modifications were performed by XII TAC, and preliminary reports indicated that all communications functioned extremely well.

OPERATIONS

Air operations in this stab at Fortress Europe may be said to have begun as far back as 28 April 1944, when heavy bombers attacked Toulon. Between then and 10 August, when the preliminary air phase started, MAAF flew more than 6,000 sorties and dropped 12,500 tons of bombs on southern France. There was a variety of reasons for these attacks—normal anti-U-boat and anti-Luftwaffe warfare, interdiction of supply lines into Italy, and smashing French marshalling yards as direct cooperation with the Normandy thrust—but more than 25 percent of the sorties were specifically designed at the time of their execution to cooperate with the forthcoming operation. The remainder should be considered to have rendered indirect cooperation.

By far the largest share of the bombs—8,353 tons—were dropped on lines of communication, ports coming next with 2,133, then industry with 1,141, and airfields with 872. In addition to the very extensive military damage thus achieved, this long series of sporadic attacks undoubtedly helped to cloak the Allied assault plan by preventing the preliminary planned air phase from being immediately evident when it began on 10 August.

MATAF's Bombing Plan divided the offensive air operations into four phases:

Phase I—Period prior to D minus 5, discussed above
Phase II—Period D minus 5 to 0350 (B) hours D-day
Phase III—Period 0350 (B) hours D-day to H-hour (0800) D-day
Phase IV—Period thereafter

This program was issued on 4 August, by which time, of course, Phase I was nearly over. In the 5 days remaining of that period, three tasks were assigned to the air forces—*counter air operations* in the Marseille, Toulouse, and Udine areas by Strategic and in the Po Valley by Tactical; *interdiction of communications,* Strategic taking the rail line Valence-Grenoble-Montmelian-Modane and Tactical the rail bridges across the Rhone south of Valence as well as its regular operational areas in northern Italy; and finally *anti-U-boat* operations, chiefly in Toulon waters, by Strategic.

Beginning 10 August, D minus 5, a new set of assignments took priority over the three tasks of Phase I, which, however, continued to be air force responsibilities. Phase II called for the neutralization of the main coastal batteries and radar stations in the assault area and the heckling of coastal defense troops by heavy bombing without jeopardizing tactical surprise. In conjunction with the deception plan, attacks on the invasion area were to be screened by similar offensive action against identical targets in four coastal localities between Via Reggio and Beziers. By alternating and scattering the intense bombing effort among these four areas, it was hoped to maintain the fiction of a false attack and conceal the true Allied intent until about H minus 16 hours. The scale of effort needed to neutralize each of the minute targets was carefully studied and the following total effort allocated:

42	group missions, heavy bombers, plus escort fighters detailed for R. C. M. targets
20	night bomber sorties—MASAF
28	group missions, medium bombers
512	fighter-bomber sorties
12	night bomber sorties—MATAF

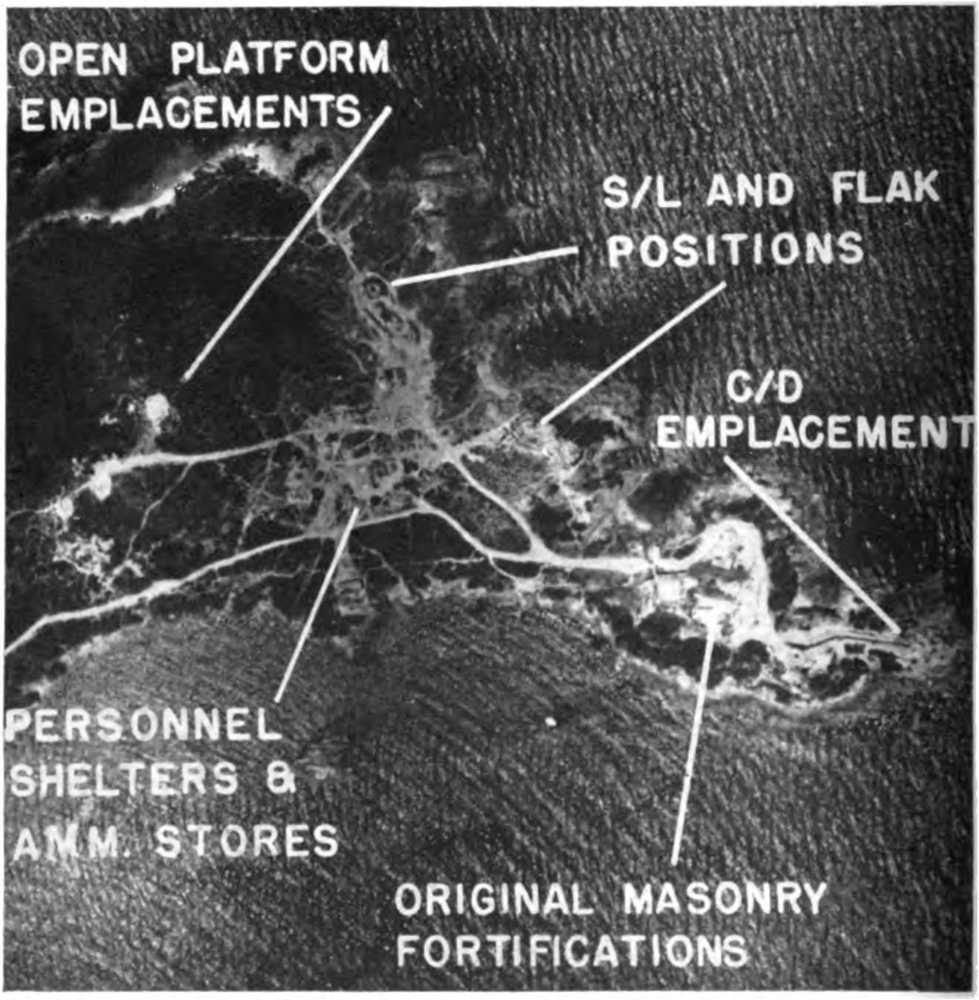
Weather interfered with the original schedule, but by 0350 hours D-day virtually the entire Phase II task had been completed. Effective sorties totaled 5,408, split about equally between Strategic and Tactical, while tonnage dropped totaled 6,740, of which Strategic supplied 4,451. Cost of the effort was 50 aircraft, of which 15 were heavies, 4 mediums, 2 patrol bombers, and 29 fighters or fighter-bombers.

Phase III commenced 1 hour after the conclusion of Phase II, 0350 hours D-day, and lasted the 4 hours and 10 minutes until H-hour, 0800. Its purpose—"to cause the maximum destruction to enemy coastal and beach defenses utilizing all available forces." The plan therefore allocated to the task 12 groups of escorted heavies from Strategic, both of Tactical's medium bomber wings, and the full striking power of XII TAC's fighter-bomber. The planned schedule of attack:

0550–0610	Small formations, each of four fighter-bombers, to patrol the assault area and silence any guns seen firing.
0610–0730	Small formations of heavy, medium, and fighter-bombers to carry out repeated attacks to destroy selected gun positions.

0635–0730 Small formations of fighter-bombers to attack selected gun positions.

0700–0730 Formations of medium and heavy bombers to carry out drenching attacks on the assault beaches with the object of beating down underwater obstacles and beach defenses.


OPEN PLATFORM EMPLACEMENTS
S/L AND FLAK POSITIONS
C/D EMPLACEMENT
PERSONNEL SHELTERS & AMM. STORES
ORIGINAL MASONRY FORTIFICATIONS

COAST DEFENSE POSITION. This position, south of Hyeres, was centered around an old French underground fortification of masonry construction with a modern, lightly built, concrete pillbox type of emplacement on the extreme tip of the peninsula. This was designed as the firing position for an artillery piece on a railway mount, which could be withdrawn about 200 feet into a slot, some 20 or 30 feet deep, cut into the solid rock. North of the fort were two searchlight positions and flak installations. In a sheltered hollow on the reverse side of the promontory were extensive field fortifications, personnel shelters, and open-type emplocements for field artillery. None of the field gun positions was occupied, however, nor was the elaborate position on the tip of the promontory armed. (See attack picture on next page.)

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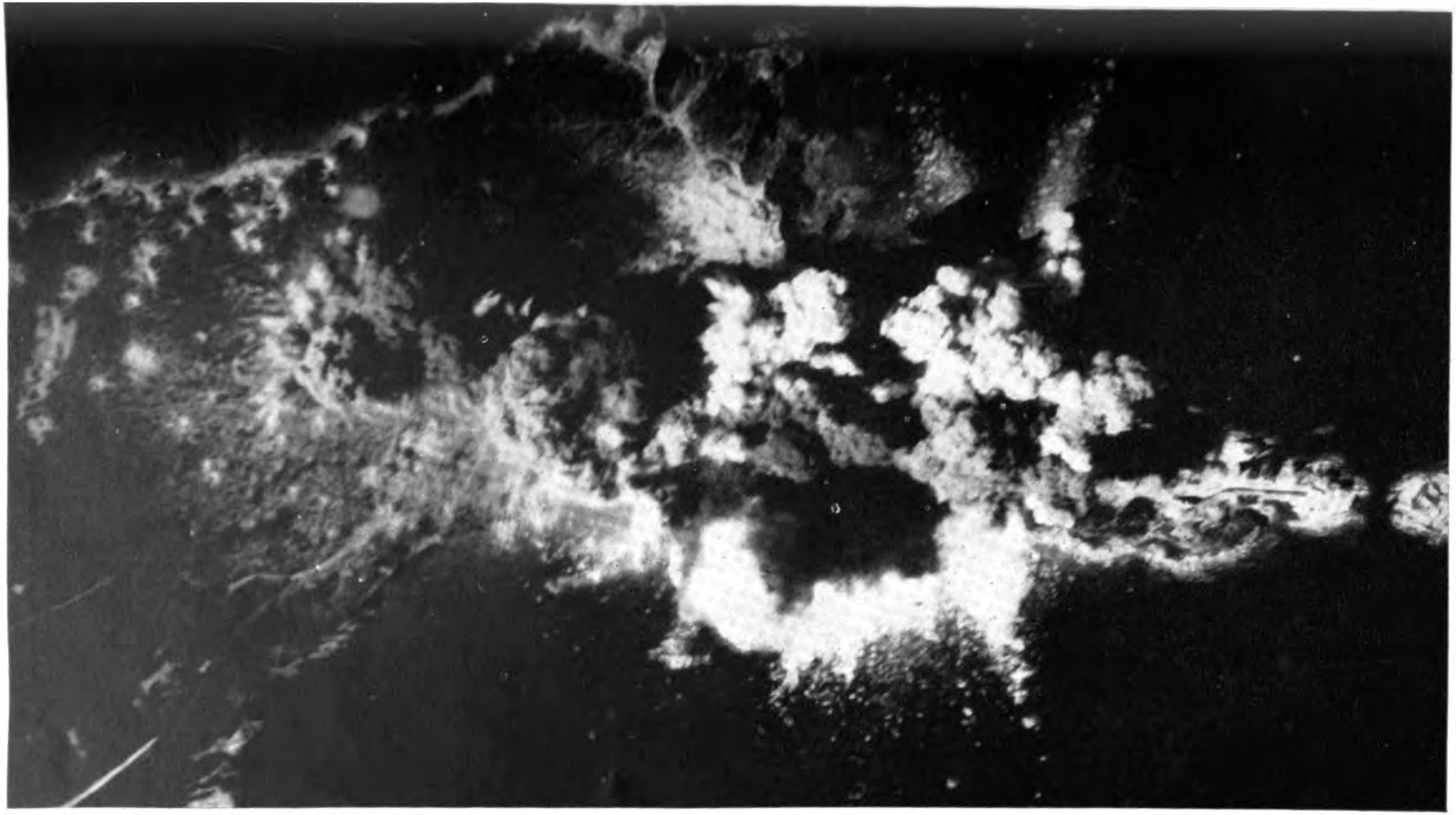
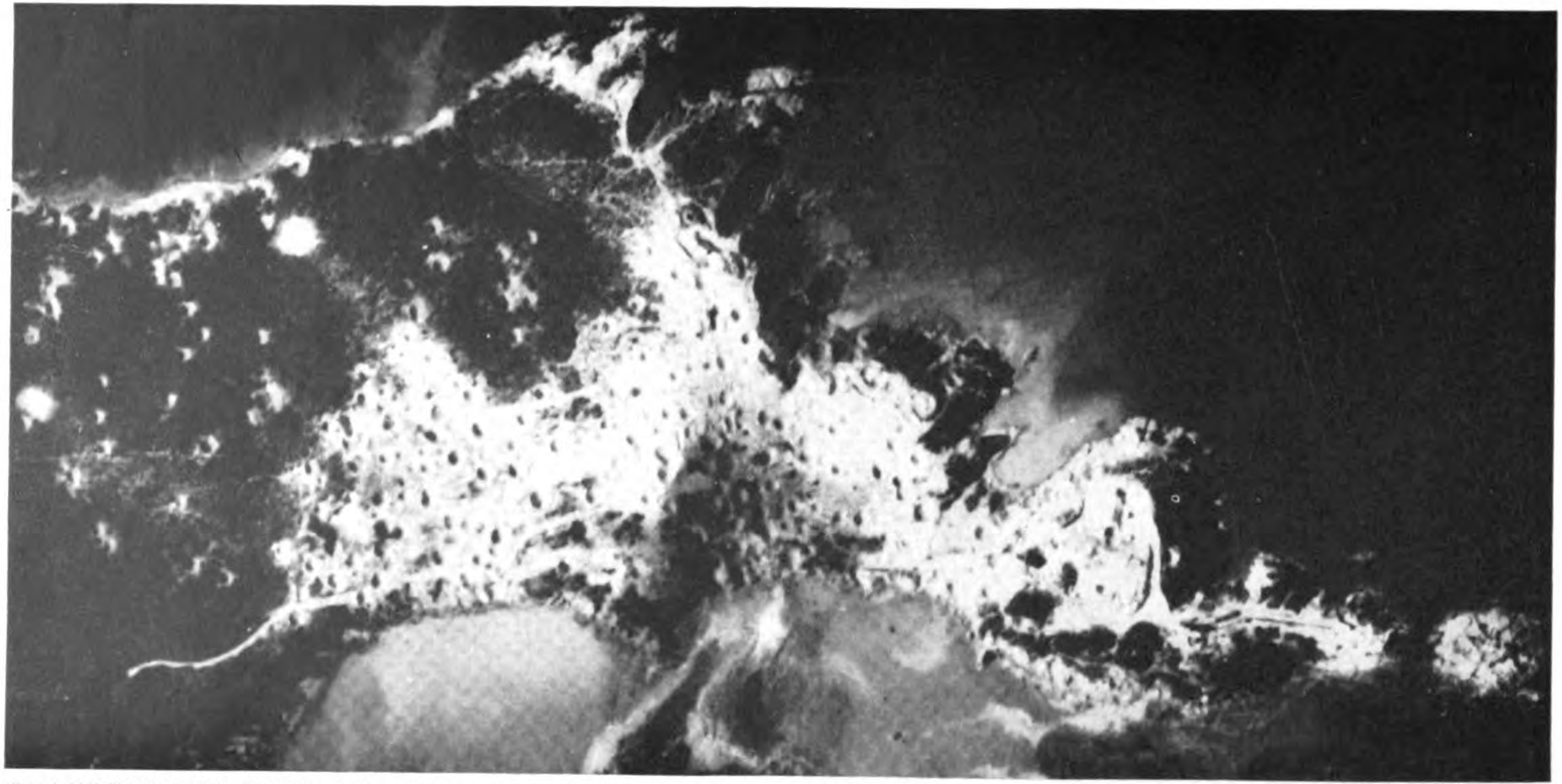
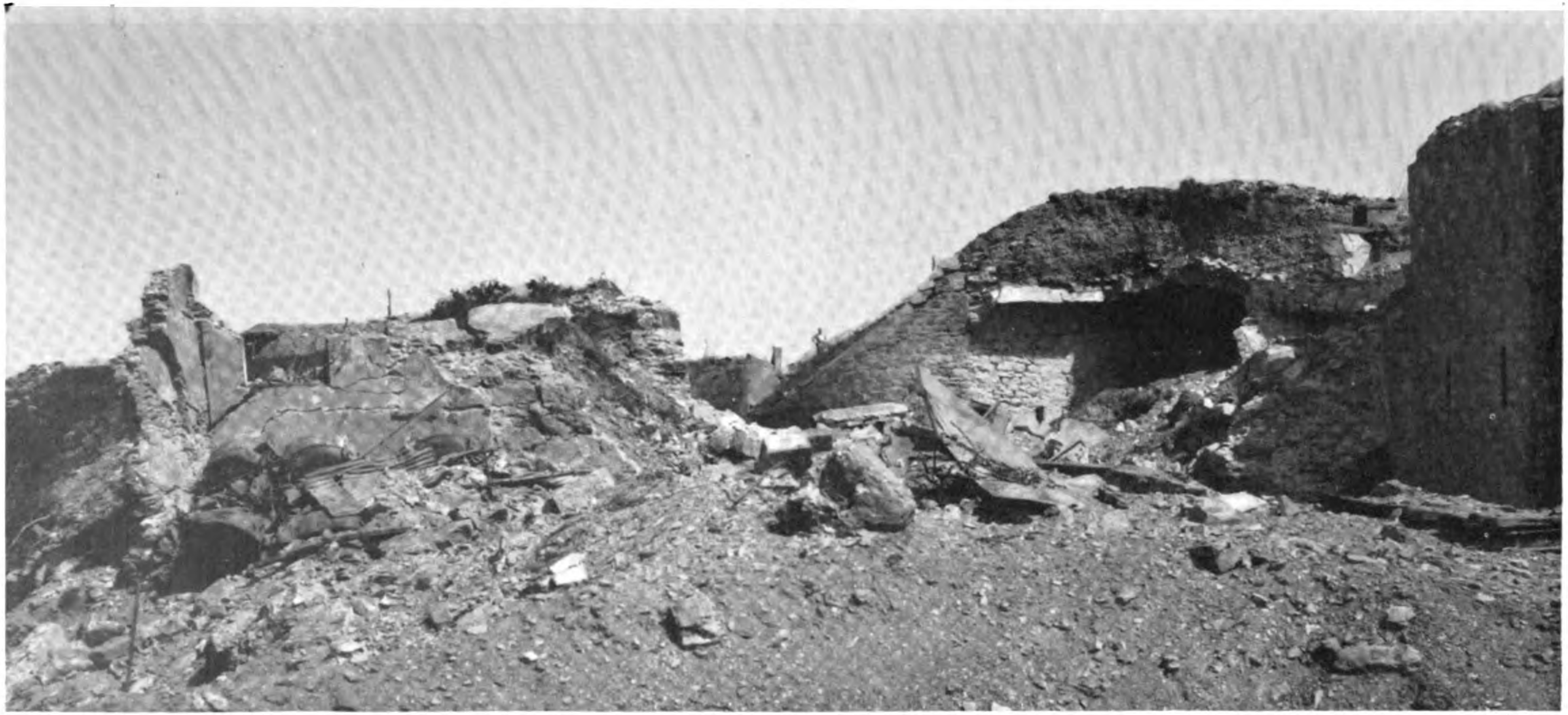


13 COAST DEFENSE POSITION. The attack on the foregoing position south of Hyeres, shown at its height. Notice that the area occupied by personnel shelters is completely blanketed.



COAST DEFENSE POSITION. This post-attack picture shows an excellent concentration of bombs and the extensive blast damage suffered by the entire area. There was no later indication of an attempt to restore any of the damaged positions to serviceability, nor any sign that the position had been utilized to oppose a landing.



COAST DEFENSE POSITION. Convincing evidence of the way in which the attacking MASAF aircraft did their work. This destruction is typical of the entire target area. Many Italian helmets and small arms were found scattered about, but local inquiry failed to confirm the presence of an Italian garrison.

0800 onward Eight Navy fighter-bombers, eight Navy R/F fighters and 16 fighter-bombers of XII TAC to be on call to attack any remaining targets.

All aircraft were assigned rigid lanes of approach to the assault area. Bomb loadings for beach attacks were fragmentation and demolition, instantaneously fuzed, and not exceeding 260 pounds. For gun positions large demolition bombs with short delay fuzing were prescribed. Beaches were to be bombed over their whole length and to a depth of 400 yards, the pattern commencing 75 yards to seaward. To avoid damaging friendly naval craft, no beach bombing runs were allowed at an angle greater than 45° to the beachline.

Dawn of D-day found the beach area overcast. In accordance with a previously agreed plan whereby the ground forces did not wish to risk air attack by PFF methods without some visual reference points, instructions were given for this limited PFF attack. Because of this restriction demanded in the interest of safety for our surface forces, some of the heavy sorties were noneffective. Remainder used PFF technique or found an occasional hole in the cloud which permitted visual attack. A large percentage of the medium effort was likewise frustrated. All told, in Phase III, MAAF dispatched 959 sorties, of which 610 were effective. Tonnage totaled 774 and the cost was 2 heavies, 3 mediums, and 1 fighter-bomber. Despite the weather difficulties, the results achieved were highly satisfactory. The three assault divisions which hit the beaches at H-hour met virtually no resistance. Two days later the Supreme Allied Commander signaled the Air C-in-C as follows:

> Please convey to the Air Forces under your command my appreciation of the bombing and fighter-bombing attacks for the operation [code word omitted] executed by them during the periods prior to D-day and on D-day itself. The Naval and Army Commanders whom I saw yesterday attribute largely their successes and small losses to the effect produced by the action of the Air Forces.

The ground attack which followed this heavy aerial preparation had two phases—sneak landings during the night of D minus 1 by Commandos and paratroops with several precise assignments, and the main assault at H-hour by three United States divisions and a glider-borne task force. The Commando and Special Service forces involved in the sneak landings had two tasks: (1) to silence batteries on the Hyeres Isles which dominated the St. Tropez beaches, and (2) to cut the one coastal highway at each end of the projected beachhead area.

This coastal road was bisected at Frejus, near the middle of the area, by a road leading from the interior down the one valley through the coastal hills. It fell to the airborne forces to bottle up this line of enemy approach by landing astride the road near the hamlet of Le Muy, some 18 miles inland.

The air plan which went into effect immediately following H-hour was in reality the normal procedure of air cooperation with ground advance. The air forces undertook three tasks: (1) To cause maximum destruction of defenses in the assault area; (2) to isolate the battlefield by destroying the remaining rail and road bridges across the Rhone and other rivers; and (3) to attack enemy troop movements. Throughout D-day Phase IV specified the participation of Strategic and the two medium wings, but thereafter only XII TAC. In consequence, D-day witnessed the mightiest air effort ever put out in a single day in the Mediterranean—4,249 effective sorties, of which 3,936 participated in the ground attack. By the end of the first week, Phase IV had been implemented by 9,646 effective sorties and 3,881 tons of bombs. Losses totaled 46 and claims were 8–1–0.

The Fifteenth Air Force had given direct assistance to the Normandy landings by bombing marshalling yards in southern France in May and June. Now, with an invasion in the south, another component of USSTAF, the Eight Air Force, was placed on call to aid the MAAF. Actually, its help was not needed, and attacks were made by the Eighth on only one day—14 August—against German airfields in the Dijon area.

By D-day Allied air supremacy was so complete that the GAF could be virtually forgotten. How impotent the Luftwaffe had become is evident in the GAF sortie figures in southern France—60 on D-day, 70 the next day. The sole German reinforcements brought up were 30 Me 109's from Italy. The fighter force still was utterly incapable of interfering with the Allies or protecting its own troops or bases. By week's end the German bomber force had to be moved back to the Lyon area. German bombing operations were attempted at dusk on the 15th through the 19th by small forces of Ju-88's against both shipping and ground targets, with inconspicuous results, although German reconnaissance undoubtedly had been successful in spotting the invasion convoys in Ajaccio harbor on the morning of the 12th.

Another measure of the success of air action was the status of German communication lines. As of D-day only one of the six railway bridges across the Rhone between Lyon and the sea was serviceable—at Avignon, where hasty repairs got one line functioning. This was the only route to the landing area from the west, for both double-track lines paralleling the Rhone between Lyon and Avignon were cut. The main Riviera line into Italy was likewise broken by bombing, while the Mount Cenis line farther north had been blocked by sabotage. At the end of the first week of the invasion, the interdictory situation was unchanged—Avignon was still the only serviceable rail line out of the area.

Best indication of all of the success of the multitudinous air operations was the swift forward rush of the Seventh Army. By week's end there was no question of the overwhelming success of the invasion. Not only had the beachhead been secured but Toulon was surrounded, Marseille almost surrounded, and armored forces, sprinting north, had reached the Rhone below Valence and were heading rapidly for Lyon. German prisoners already totaled 16,500, while total Allied casualties (as of 2400 hours, 19 Aug.) were 1,529 killed or missing and 3,491 wounded. Hard fighting continued in places, but complete conquest of southern France was obviously only a matter of time. On 21 August Lt. Gen. Jacob L. Devers, Deputy Commander of AFHQ, wrote to Lt. Gen. Ira C. Eaker, Air C-in-C as follows:

> Now that we have settled down for a moment, I wish to tell you what a grand job you, Cannon, Twining, and Saville did and are continuing to do in our present effort in southern France. Your aerial preparation and later support made possible our great gains.

OPERATIONS DURING THE SECOND WEEK

The swift advance continued.

Fanning out westward and northward, the Seventh Army captured Toulon and Marseille in the westward drive, and simultaneously pushed two separate forces northward almost as far as Lyon. One of these spearheads advanced straight north to take Grenoble; the other cut across to the Rhone below Valence, then turned down the vital river to Montelimar and up it toward Lyon. Forward elements of American troops were reported on the Swiss border and

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others probing eastward had come up against German defenses of the approaches to Italy through the Alpine passes. Meanwhile, French Forces of the Interior had seized Toulouse, cleared Haute Savoie, and mopped up German remnants in dozens of isolated localities. On 28 August AFHQ daily G–2 report commented:

> With the capture of Montelimar by American troops yesterday evening, organized enemy resistance throughout southern France, south of a line from Grenoble to Bordeaux, has ceased, except only in the southeast corner of France, to the east of the River Var, from which 148 Infantry Division is gradually withdrawing across the Franco-Italian frontier. Very heavy losses were inflicted on the enemy in the elimination of the pocket to the south of Montelimar and it has been claimed, without confirmation, that 15,000 prisoners were captured.

Total prisoners taken through 28 August exceeded 42,000.

AIR OPERATIONS

In cooperation with the swiftly moving ground forces, Mediterranean Allied Air Forces continued to operate in accordance with the Phase IV plan. With the battle proving so easy and opposition so weak, Strategic Air Force was entirely withdrawn. The Mediterranean coast being virtually cleared of the enemy, Coastal Air Force's participation likewise was slight, totaling only 614 sorties for the seven-day period of 22 through 28 August. Virtually the whole burden of the air operation thus came to rest upon Tactical Air Force, which flew 3,299 effective sorties and dropped 1,907 tons of bombs. Fighters accounted for 2,356 of the sorties, but the medium bombers dropped 1,470 tons of the bombs. The weight of the attack was approximately evenly divided between lines of communication and enemy concentations, the former receiving 851 tons of bombs, the latter 953.

German Air Force

Allied domination of the air was so complete that during the first week of the invasion, probably by 19 August, the few German Air Force units in southern France had decided to evacuate. The fighters which had moved in from north Italy returned to their former area, while the bomber and recce units apparently went all the way back to Germany. As a result, during the second week of the invasion there was no German air action in southern France whatsoever, except for an occasional solitary reconnaissance plane.

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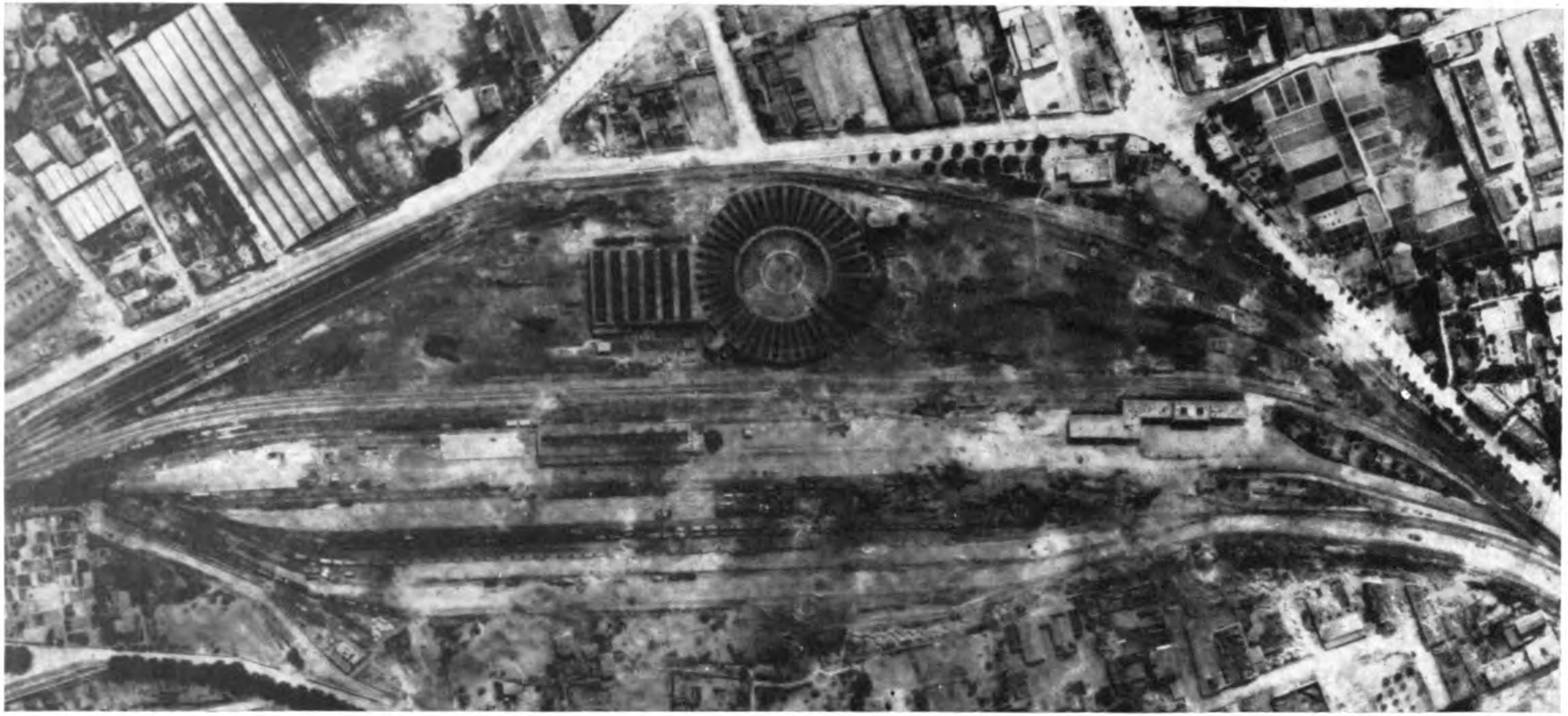

SUCCESSFUL COMMUNICATION TARGET ATTACK. Post-attack reconnaissance photograph shows destruction caused at Nice marshalling yard by aircraft of MASAF, which pounded communication objectives from 19 May to 16 August 1944.

Interdiction

As the battle wore into its second week it became apparent, to quote MAAF Intelligence Weekly Status Report of Interdiction, that

> Any further widespread destruction of rail and road communications might well be a greater disadvantage to our own swiftly advancing forces than to the retreating and partly disorganized enemy * * *. The aim of our attack on communications changed to the blocking of enemy escape routes rather than the cutting of lines of supply.

This meant chiefly that the pattern of attack switched from medium bombers hitting major bridges to fighter-bombers attacking minor road and rail bridges immediately ahead of the fleeing German forces.

Movement to France

As the front rapidly moved away from the beachhead area it became increasingly difficult throughout the week, with aircraft based in Corsica, to keep pace with the Allied advance. Allied plans for the speedy development of operational fields in France were therefore pushed hard. By week's end six fields, some of them nothing but fresh landing strips scraped from the vineyards, were operational, and substantial elements had made the shift from Corsica to the mainland. These included 3 U. S. P–47 groups, 11 RAF Spitfire squadrons, 1 RAF Spitfire TR squadron, and 1 U. S. P–51 observation squadron.

Anti-radar attacks

A preliminary estimate by the Enemy Radar Intelligence Bureau, Headquarters, MAAF of the success of the air attack against German radar stations in southern France in the period directly preceding D-day indicates that of the 22 radar sites attacked between 11 and 14 August only 5 were rendered unserviceable, with 4 more probably knocked out of commission. Notes the report: "Although this does not appear to be very satisfactory, the greatest measure of success was achieved in the most important area, from Cap Blanc to Cap d'Antibes."

Troop carrier

The success of the assault made unnecessary the original plan to drop fresh paratroops in the Maquis area on or about D plus 4. Instead, on D plus 4 orders were issued for the immediate return to the United Kingdom of the two troop carriers wings borrowed from the Ninth Air Force for the invasion.

* * *

The fourth stinging body blow had been delivered. Jerry was disorganized, desperate, confusedly retreating from a foe steadily gaining strength. Still far from beaten, never more dangerous than when cornered, he was nonetheless badly hurt.

In all humility, and with admiration for all arms which took part in the operation, it can be said that the U. S. Army Air Forces contributed in large measure to the over-all success. From General Arnold came a message of warm commendation to all AAF units which had had a hand in the proceedings.

The Commanding General's unstinted praise is to be shared by all components of the MAAF, air and ground, of whatever nationality, for their work during the 6 months preceding the invasion and during those fateful days of crashing into France from the south.

THE AIRBORNE OPERATION

SPECIAL attention is given in the following pages to the airborne aspect of the southern France invasion, as distinguished from the part played by the strategic, Tactical, and Coastal Air Forces. This more detailed description is given for two reasons:

1. Vertical warfare, a recently developed technique, is worthy of study for its possible use during later stages of the war.

2. The resounding success of this airborne operation was due to careful planning, adequate build-up and supply, and efficient execution, after formidable handicaps had been overcome.

THOUGH the ultimate success of the airborne operations was an outstanding feature of the invasion of southern France, at the time planning took place trained airborne troops and equipment were conspicuous by their absence.

In February 1944 not one available unit, airborne or troop carrier, was actually prepared for airborne operations. The 51st Troop Carrier Wing, consisting of three groups, had remained in the theater after the inactivation of the XII Troop Carrier Command. But it was the same old headache; only a portion of the wing was available for troop carrier training because of unceasing demands for troop carrier aircraft for special operations, air evacuation, and general transport chores. A few aircraft were attached intermittently to the Airborne Training Center, where a limited program of airborne training was feasible, and this training was accorded a French parachute regiment, two pathfinder platoons, and the American replacements. A British independent parachute brigade was serving in the line as infantry with the Eighth Army; an American parachute battalion and two batteries of a U. S. parachute field artillery regiment were similarly committed to the Fifth Army. No air component, no ground component—a great prospect for an airborne operation.

By May things looked brighter. Following the movement of the 51st Troop Carrier Wing from its Sicilian base to Italy, the parachute units were withdrawn from the line and given intensive training with a full troop carrier group made available in the Salerno area.

The War Department was requested to provide an airborne division for the landings. In lieu of this, several separate units were shipped to the theater. Two of these units were attached to the Airborne Training Center, then located in Sicily, for training, while a third was attached to the Fifth Army for 10 days of battle experience in the line.

Thus by the middle of June the theater had substantial airborne forces on tap. To secure the utmost cohesion, it was decided to move the Airborne Training Center with its attached units, as well as the troop carrier aircraft—now increased to two full groups of the 51st

Troop Carrier Wing—to the Rome area. Here was established a compact forward base for all our airborne forces.

ORGANIZATION

Airborne elements

Toward the first of July the plans for the operation were firmed, including the use of a provisional airborne division made up of the usable units in the theater. Maj. Gen. (then Brig. Gen.) Robert T. Frederick, formerly commander of the First Special Service Force and later commander of the 45th Infantry Division, assumed command of the composite force. Certain units on the troop list were earmarked as additional supporting units to organize a balanced airborne force, and authority was requested of the War Department to activate those units not authorized on the theater troop list. By 7 July initial instructions relative to the Provisional Airborne Division were issued to General Frederick.

The division was then given a 5 percent overstrength in personnel by the assignment of parachute filler replacements from the Airborne Training Center. Meanwhile, activation was completed of the divisional headquarters and headquarters company, two additional batteries of field artillery, an airborne signal company, and an antitank company. Because D-day was racing toward them like the end of a runway, it was decided not to attempt to prepare the antitank company for the operation, since a Japanese-American company was at hand.

Qualified airborne officers were scarce. As the result of a request for personnel for General Frederick's staff, 36 staff officers arrived in the theater toward the middle of July. Most of them had come from the 13th Airborne Division and a few from the Airborne Center, Camp Mackall, N. C.

For employment in the preparatory stage but not in the operation itself, detachments from a signal operating company, a quartermaster truck company, and some 400 replacements from the Airborne Training Center were placed at General Frederick's disposal.

Troop carrier elements

By the middle of July the 51st Troop Carrier Wing could use two groups for airborne operations; the third was occupied with special duties. To implement the operation, Allied Force Headquarters called for additional troop carrier groups and a minimum of 450 aircraft. On 10 July 1944 orders were issued placing the 50th and 53d Troop Carrier Wings of the IX Troop Carrier Command, then in the United Kingdom, on temporary duty in the theater. Each wing had four groups of three squadrons, reinforced by self-sustaining administrative and maintenance echelons and by IX Troop Carrier Command Pathfinder Unit, a total of 413 aircraft. In addition to the personnel and equipment moved by organic aircraft, the Air Transport Command transported a medical evacuation squadron, various signal detachments, assorted parapack equipment, and 375 organic glider pilots. Made in eight echelons via Gibraltar and Marrakech, the move required only 2 days, two aircraft being lost en route. Maj. Gen. Paul L. Williams, commanding the two wings from the United Kingdom, arrived on 16 July and activated the Provisional Troop Carrier Air Division, which had all its units stationed at their designated airfields by 20 July, ready to carry out their missions.

With only some 130 operational CG–4A and 50 Horsa gliders to draw on, rapid steps were taken to get enough for the operation. Fortunately, a previous requisition for 350 Waco gliders from the United States had been made; it was necessary only to expedite this request. The British airborne forces had sufficient Horsa gliders to provide for their brigade group. The shipment from America duly arrived and the gliders were assembled in jig time, being readied 10 days before D-day. To provide for two pilots for each glider, 350 additional pilots arrived from Britain. By special air and water transport, some 600,000 pounds of cargo parachutes and aerial delivery equipment arrived in time for the operation, the last large shipment being received on D minus 4.

Concentration of units

A compact airborne base had been organized by the Airborne Training Center and the 51st Troop Carrier Wing at Ciampino and Lido de Roma airfields in the Rome area. By 3 July an advance echelon of the Airborne Training Center was established at Ciampino airfield, and by 10 July the center, with its attached units, a parachute battalion and a glider infantry battalion, was completely located there. Since the divisional staff ordered for General Frederick could not arrive until about 15 July, all other American airborne units in the theater were attached to the Airborne Training Center so that its staff could help to concentrate the airborne troops. Ordered out of the Fifth Army line, the parachute regimental combat team arrived 5 July. Various supporting arms and services placed at the disposal of the Provisional Airborne Division were attached to the Airborne Training Center for instructions. By 17 July General Frederick had moved his headquarters to Lido de Roma airfield, and on 21 July he requested that the name of his provisional organization be changed to "First Airborne Task Force," the use of the term "division" being a misnomer. The Commanding General, Seventh Army concurred and redesignated the unit accordingly.

PLANNING

Tentative plans had been in the making for some time, but no final detailed pattern for the airborne operation was possible until the First Airborne Task Force and the Provisional Troop Carrier Air Division were organized and ready to function, which brought affairs almost to 20 July. On his arrival the Commanding General, Provisional Troop Carrier Air Division approved the suggested plan of using the previously selected take-off fields, at Ciampino, Galera, Marcigliano, Fabrisi, Viterbo, Tarquinia, Voltone, Montalto, Canino, Orbetello, Ombrone, Grosseto, Fallonica, and Piombino. Subsequently the Provisional Troop Carrier Air Division undertook primarily the planning and coordinating aspects of the operation, involving timing, routes, corridors, rendezvous, and traffic patterns. In general, planning for the selection of drop zones and landing zones and the composition of lifts was left to the airborne and troop carrier units involved.

It was first decided that a predusk airborne assault on D minus 1 should not be made, as this might jeopardize the success of the entire operation. Second, it was concluded that it would be neither necessary nor advisable to launch the initial vertical attack after the amphibious assault had begun. The latter decision was reached in view of the wide experience of our troop carrier crews in night take-off operations, and because of the marked improvement in pathfinder technique. Consequently the basic plan called for a predawn assault. One plan, contemplating an immediate staging in Corsica, was rejected because of lack of Corsican airfields, and also because the few available were located on the eastern side of the island, necessitating a flight over 9,000-foot mountain peaks. A further consideration was

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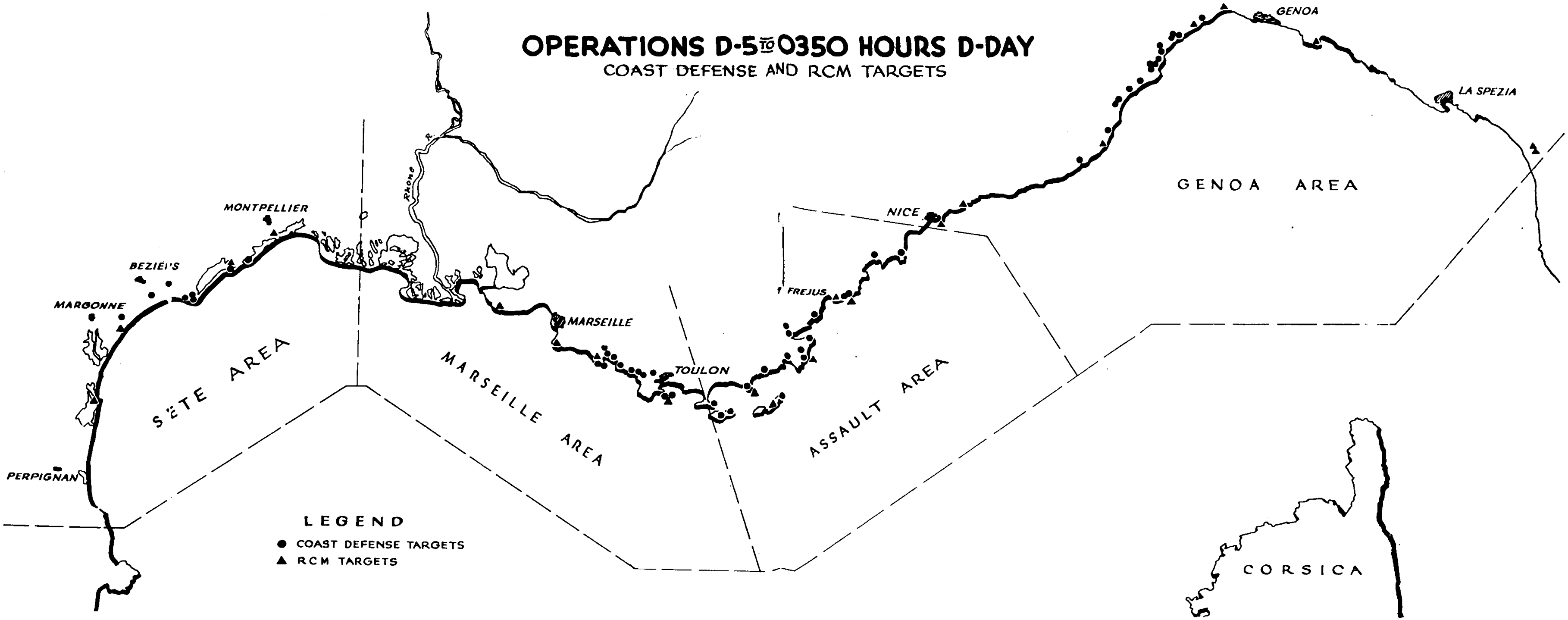

that such an intermediate staging would require that the airborne corridor be established south of the main naval channel, entailing a dogleg course for the flight.

From numerous conferences the rough plan emerged and was approved about 25 July 1944, calling for the use of the equivalent of an airborne division beginning with the first dropping to be by airborne pathfinder crews at 0323 on D-day. The main parachute lift of 396 plane-loads was to follow, starting at 0412 hours and ending at 0509 hours. The follow-up glider landings, composed of 38 Waco and Horsa gliders, were to take place at 0814 hours and continue until 0822 hours. Later in the same day a total of 42 paratroop plane-loads was to be dropped, followed by 335 Waco gliders, starting at 1810 hours and ending at 1859 hours. The automatic air resupply, originally designed as a part of the D-day late afternoon mission, was postponed because insufficient troop carrier aircraft were obtainable and because the Troop Carrier Command could not drop supplies from aircraft towing gliders in the afternoon glider lift. The final plan provided that 112 plane-loads were to be brought in automatically on D plus 1. The rest of the supplies were to be packed and held for emergency use under Seventh Army control. The troop carrier route was carefully chosen after due consideration of the following factors:

1. Shortest feasible distance
2. Prominent terrain features
3. Traffic control for the 10 troop carrier groups
4. Naval convoy routes
5. Position of assault beaches
6. Primary aerial targets
7. Enemy radar installations
8. Avoidance of excessive doglegs
9. Prominent landfalls
10. Position of charted enemy flak installations

This route logically followed the Italian coast generally from the Rome area to the island of Elba, the first overwater check point, continuing to the northern tip of Corsica and proceeding on an azimuth course over naval craft check points to the landfall, just north

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of Frejus at Agay. Complete coordination was established with the Navy on the position of this corridor, and detailed information concerning it was widely disseminated among naval forces.

Because of high terrain features in the target area, it was decided to drop the paratroops and release the gliders at exceptionally high altitudes, varying from 1,500 to 2,000 feet. Towed glider speeds were set at 120 m.p.h. and dropping speed at 110. The formation adopted for the parachute columns was the universal "V of V's" of 9 ships, in serials of 45 aircraft, each with 5-minute intervals head to head between serials. The glider columns adopted a "pair of pairs" formation, echeloned to the right rear with 1,000 feet between pairs in column. Serials made up of 48 aircraft towing gliders in trail were used with 8-minute intervals between serial lead aircraft. Parachute aircraft employed a maximum payload of 5,430 pounds; Horsa gliders, 6,900 pounds; CG–4A (Waco) gliders, 3,750 pounds.

Maps and models were hard to get, which made planning difficult. Map shipments were late or faultily made up. There were terrain models on a scale of 1: 100,000, but the most useful terrain model, a photo-model on a scale of 1: 25,000, could be had only in one copy, which could not serve both the Provisional Troop Carrier Division and the First Airborne Task Force. The original coastal obliques were of little use, since the run-in from the IP (first landfall) was not adequately covered. The blown-up large scale photographs of the dropping zone and landing zone areas were excellent, but they arrived too late for general use. (These late photographs uncovered the element of antiglider poles installed at the landing zones, not revealed by any previous photographs.)

PREOPERATION TRAINING

By the middle of July, nearly all the airborne units to be employed in the operation had been assembled in the Rome area. An intensive final training program had been instituted by the First Airborne Task Force in conjunction with the Airborne Training Center. Of the airborne units to be used, only one parachute battalion and a British parachute brigade had received any recent combined airborne training with the troop carriers. The regimental combat team had just come out of the line with the Fifth Army, as had the parachute field artillery battalion. Other units had but recently arrived overseas and had

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been given a course in ground and refresher training at the Airborne Training Center.

Particularly urgent was the task of training the newly organized glider-borne troops. A combined glider school was established and instruction in loading and lashing for these troops was started. Upon completion of the course, they were given orientation flights and finally one skeletonized, practice operational landing on a simulated LZ.

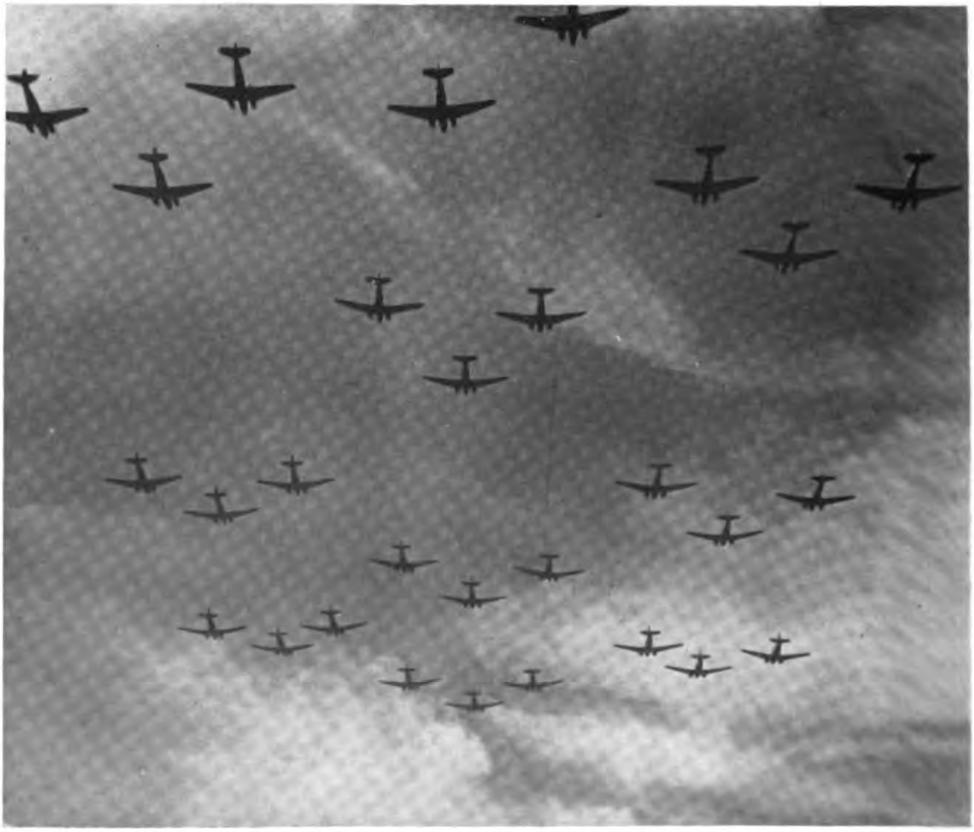
The Pathfinder Unit of the Provisional Troop Carrier Air Division conducted joint training with the three airborne pathfinder platoons and tested the radar and radio aids to be used in the operation. This training was divided into three phases, the first being concerned with the technical training with Eureka sets, M/F beacons, lights, and panels. Tests were made to locate any deficiencies in either the training or the apparatus. The second phase was devoted to practice by the crews in using the equipment under all possible conditions. The third phase emphasized actual drops with full equipment in which every attempt was made toward the utmost realism. Small groups of follow-up parachute troops were dropped on the prepared drop zones to test the accuracy of pathfinder aids.

Difficulty in repacking the parachutes in time for the operation precluded the staging of realistic, large-scale final exercises. However, practice drops were made with two or three men representing a full "stick" of paratroops, with the remaining elements placed in the DZ's to practice assembly. There was just time to squeeze in a combined training exercise with the Navy, in which all vessels carrying waterborne navigational aids were placed in their proper relative positions. A token force of three aircraft per serial was flown by all serial leaders over these aids, observing exact time schedules, routes, and altitudes. Two serials of 36 aircraft each were flown over this same route during daylight to acquaint the naval forces with troop-carrier formations. Further practice runs were made by the troop carriers in conjunction with two fighter groups in order to work out the details of the fighter cover plan and the air-sea rescue plan.

Because the task force was composed of units which had not previously worked together, training of combat teams was further accented for successful operations after landing. Training of each combat team was conducted on terrain carefully selected to duplicate as nearly as possible the combat team's sector in the target area. From the regular replacement depots and the Airborne Training Center were drawn the specialized personnel required, who had then to be specifically trained for their assigned tasks. Fortunately the larger elements of the command, particularly the combat teams, were trained already. Some were battle-seasoned and nearly all were capable of looking out for themselves in a pinch. Thus they could aid the Airborne Task Force as a whole during the training period.

THE OPERATION

The night of D minus 1 was clear and cool in the take-off areas. The troop carrier units waited at their stations on 10 airfields extending some 150 miles along the Italian peninsula from Ciampino near Rome to Fallonica. Lack of transportation had compelled the bulk of the force to commence moving to dispersal airfields as early as



TROOP CARRIER FORMATION. C–47's in formation during one of the daylight drops on southern France. This is the universal V of V's formation referred to in the text.

D minus 5. By D minus 2 the shift had been completed. Now, with preparations complete, an air of confident expectancy prevailed.

Anxiously the weather was watched. The date had been unalterably set for 15 August, and weather meant everything. Hill masses and coastal features must be readily identified. A portion of a high pressure area, broken off from its North Sea center, had settled over the main target zone, with its threat of accumulating fog or stratus. The forecast was for clear weather to Elba, followed by decreasing visibility until the DZ's were reached, where it was expected to be 2 to 3 miles. Actually the visibility was less than half a mile. The valley fog, which completely blanketed the early parachute operation, did however lift by 0800 hours in time for the morning glider mission. To make navigation difficulties tougher, the wind was almost 90° off the forecast direction, and infrequent check points over the water route were the navigators' only means of correction. Luckily, the wind did not reach high velocity and was less than 6 m.p.h. over the DZ.

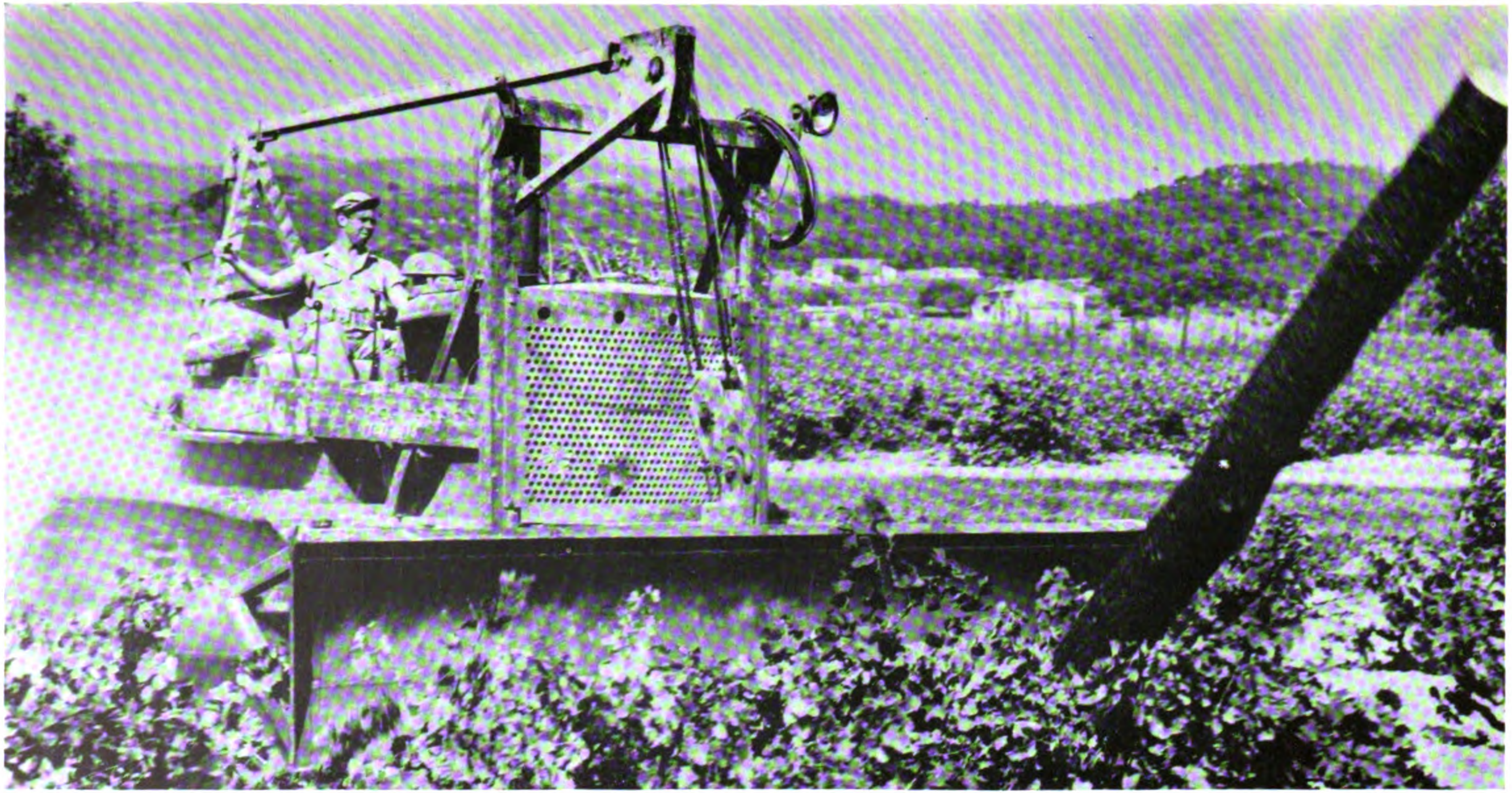
Shortly after midnight of 14–15 August the real show began. With everything ready for the green light, the first troop carriers with their load of three pathfinder units took off at 0030. The pathfinder platoons proceeded as a group on a direct line to southern France, making their first landfall just south of Cannes. With PPI sets in all aircraft, the pathfinders proceeded inland as planned, located the drop zones, and dropped their teams at 0323, 0330, and 0334 hours respectively, on DZ's, "O", "A", and "C".

Approximately 1 hour after the pathfinders, the main parachute lift, composed of 396 aircraft in 9 serials averaging 45 aircraft each, took off and proceeded on their courses, using amber downward recognition lights until the final water check point had been crossed. Wing formation lights were also employed, and no instance of friendly naval fire on our planes was reported. No enemy aircraft was encountered. Of particular interest is the fact that some 400 troop carrier aircraft flew in relatively tight formation, under operational strain, for some 500 miles without accident. Training in night formation flying had paid off.

Undoubtedly the radar, radio, and other marker installations were responsible for this flying accuracy. Eurekas had been installed at each wing departure point, the command departure point, the northeast tip of Elba, Giroglia Island (North Corsica), and on three marker beacon boats spaced 30 miles apart on the course from Corsica to the first landfall check point at Agay, France. These worked perfectly, with an average reception of 25 miles. Holophane lights, also placed at these positions, aided the navigators to correct their courses against contrary wind currents. Their reception averaged 8 miles until the DZ's were reached, when haze and ground fog made them invisible. MF beacons (the Radio Compass Homing Devices) were installed at Elba, on North Corsica, and on the center marker beacon boat, and were also dropped on the DZ's along with the Eurekas and Holophane lights. Many pilots reported that they received these signals up to 30 miles. The MF beacons often kept the aircraft on beam when they occasionally lost the Rebecca signal on their Eurekas. In many cases, the Rebecca signals exhibited a tendency to drift off the frequency despite constant operational checking. Such evident functional defects in Eureka-Rebecca sets may jeopardize a whole mission.

In general, the parachute drop was fully successful. Approximately 85 percent, a far larger proportion than had been accomplished in previous operations in the European theater, landed on the DZ's or in their immediate vicinity, in areas contiguous to the drop zones, from which terrain the parachute forces could carry out their assigned missions. All this was despite the handicaps of no moon, general haze, and heavy ground fog. An estimated 45 aircraft completely missed their DZ's. Some of these dropped their troops as far as 20 miles from the selected areas.

Among the aircraft which missed the DZ's were 20 in Serial No. 8, which released their troopers prematurely on the red light signal. The only likely explanation is that a faulty light mechanism in one of the leading craft must have gone on green prematurely and the troops in the lead ship jumped according to this signal. The troops in the following airplanes, seeing those in the leader jump, probably did likewise, jumping while the signal in their own aircraft showed red. Two "sticks" of paratroops landed in the sea off St. Tropez, near Cannes. The remainder made ground landings in the vicinity of these two towns. Although far from the designated DZ, these units organized themselves, made contact with the FFI forces, and proceeded to seize and hold St. Tropez. Approximately 25 aircraft of another group which missed their DZ dropped their troops some 15



CLEARING ANTIGLIDER OBSTACLES. An American bulldozer bowls over one of the numerous antiglider poles installed in a French vineyard in anticipation of the southern France invasion.

miles north of Le Muy near Fayance. Although about 20 miles away from where they belonged, they either undertook individual missions or sought to rejoin their units. By evening of D-day, most of these forces were reassembled on DZ's "A" and "O". Many high-ranking staff members were in this group.

During the drop, DZ "A", generally west of Le Muy, tended to merge with DZ "O", slightly northwest of this key town in the Vargennes Valley, causing considerable confusion later in the day. This accidental merging of the two zones created difficulty during the period of bundle recovery, difficulty which was aggravated because the British Parachute Brigade on DZ "O" was using equipment different from that of the U. S. Regimental Combat Team on DZ "A".

The terrain of the DZ's was generally excellent. Both zones covered an area of small, cultivated farms featuring vineyards and orchards. There were very few large buildings, telephone wires, tall trees, or other formidable obstacles. The antiairborne poles set up in the zones had not been sharpened or placed in sufficient density to offer any material obstruction. Probably not more than a squad suffered any injury from these hazards. A total of 175 paratroops, scarcely more than 2 percent, suffered jump casualties. Probably not more than 100 of these were breaks or sprains serious enough to take the men out of action for any considerable time. DZ "C" was a hill mass more rugged than the other zones, but even this rougher ground did not mar the jump's success.

Serial No. 14, first of the glider serials, made up of supporting artillery and antitank weapons for the British Parachute Brigade, left as scheduled for its 0822 landing but was recalled because of heavy overcast. The flight, after circling for nearly 40 minutes, landed at 0900 hours. One glider and tug had to turn back. One glider ditched offshore and another, because of structural defects, disintegrated in mid-air. The stakes that bristled all over the LZ's proved minor obstacles, though they did some damage to the gliders and occasionally to their loads. Small, shallowly planted, and too widely dispersed, the poles frequently served as additional braking power. The French farmers who had been impressed as labor for planting the poles had not served their German masters very efficiently. On an average these poles were 12 feet high and 6 inches thick, driven less than 2 feet into the ground and spaced 30 to 40 feet apart.

The parachute load made up of the 551st Parachute Battalion dropped accurately on DZ "A" at 1800 hours as planned. This drop was followed up rapidly by continuous glider serials. Nine gliders were reported to have been released prematurely, four of which made water landings. Prompt action by the Navy saved a large percentage of their crews and personnel. The landing skill of our glider pilots was highly satisfactory; although the 1,000-foot towing interval caused considerable jamming over the LZ's, they made excellent landings. Several pilots even ground-looped to avoid obstacles and still brought in their cargoes and personnel safely.

Another reason for crowding over the landing zones was that part of the successive flights sought additional altitude as a result of the normal "accordion movement" of the flights en route. In turn this progressively caused a layer effect which resulted in a greater mass of aircraft being over the LZ's at any one time than had been anticipated. Further difficulty was caused by early glider pilots landing on the best and most obvious sections instead of in their designated localities. Later lifts found their assigned areas almost entirely occupied with gliders, which forced them to seek alternate and less desirable zones. All these factors caused many heavy and short landings which seriously damaged large numbers of gliders. The pilots simply had to dig in on their landings because of limited space. Although these abrupt, heavy landings caused excessive damage to the gliders, the pilots by presence of mind, prompt action, and skillful maneuvers saved many lives and much valuable equipment. It was established by D plus 6 that not more than 125 glider-borne personnel were injured in these landings.

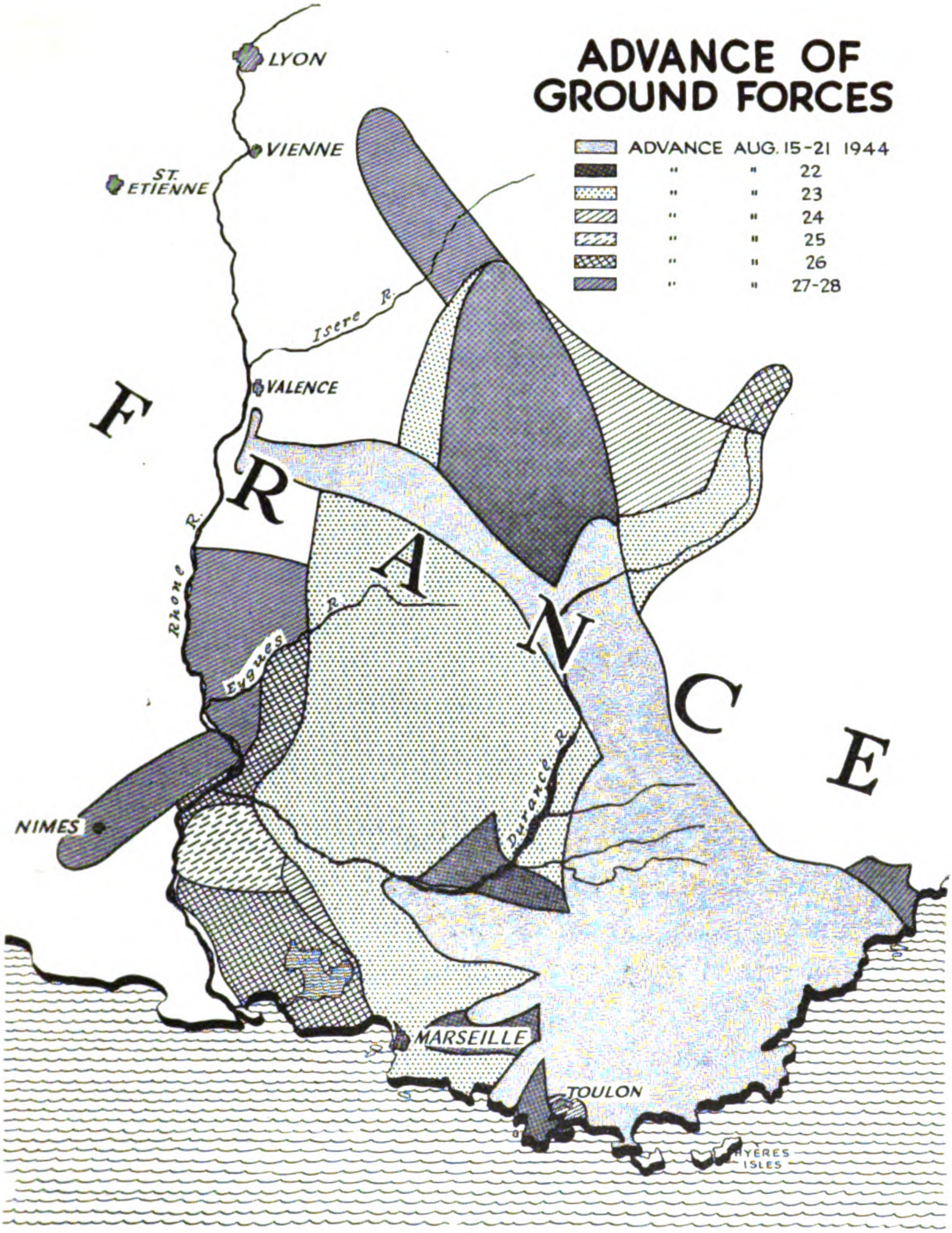
Although not encountered in the operation, it is worthy of note that in the Frejus area, outside the drop zones, there was a second type of antiglider obstacle which consisted of small but sturdy sharpened stakes, some 18 inches high, firmly imbedded in the ground and connected by wire, which could easily tear up the bellies of any gliders landing on such terrain.

Less urgent than had been expected was the problem of air resupply. Absence of serious enemy opposition caused ammunition expenditure to fall below the anticipated amount. The initial plan of bringing in the first supplies by air on D-day was changed, so that it was not until 1000 hours on D plus 1 that two troop carrier groups brought in 116 aircraft loaded with supplies. They arrived over the DZ's on schedule but at an altitude well over 2,000 feet, which made accurate dropping extremely difficult. A rather stiff breeze, the high altitude, and the merging of DZ's "O" and "A" placed much of the equipment in the hands of the wrong ground units. Well over 95 percent of the 1,700-odd bundles dropped by parachute landed safely, but much of the specialized equipment failed to reach the units which had requested it. Subsequent missions carrying emergency medical and signal supplies were flown again on the night of D plus 1. Although these drops had to be made at night by pathfinder aids, the success of these missions was above average, except that again the high altitude caused excessive scattering.

GROUND ACTIVITIES

The enemy didn't put up much ground opposition.

More difficult to take than the average objective was Le Muy. The main bridge leading into town was captured well ahead of schedule late on D-day by the British Parachute Brigade, but the town itself was not taken until the morning of D plus 1, as the D-day attack failed to seize the objective and an American glider infantry battalion was later ordered to attack and occupy the town, which was accomplished. The force quickly took Le Mitan, La Motte, Castron, and Les Serres by noon of D-day. Contact was promptly made as planned with the 45th and 36th Infantry Divisions. Elements of one regimental combat team, together with a parachute battalion, took Draguignan, while another parachute battalion assisted the amphibious landing by extending detachments down to the beach following their early landing. Most of the howitzers of the field artillery battalions were functioning shortly after the drop. Similarly, the 4.2 mortar companies and a pack artillery battalion, which came in with gliders, went into action very promptly. The operation was a great boost for parachute field artillery. Almost all the howitzers were in position and firing by noon of D-day, and all were ready for action by dark. With a parachute battalion isolated and inaccessible by road, no other type of artillery could have supported it. The surprise



achieved by the landings and the cutting of communication lines by the airborne forces prevented proper employment of enemy mobile reserves, as attested to by the captured general commanding the German corps.

By 18 August the force had commenced to reorganize in the vicinity of Le Muy, following which it proceeded along the Riviera toward Cannes, Nice, and the Italian border. The British Parachute Brigade was taken out of action and preparations were made to return it to its base in the Rome area for further possible airborne operational use. The First Special Service Force replaced the British brigade, and the Airborne Task Force then continued to advance along the coast, meeting determined rear-guard opposition. These operations of the Task Force toward the Franco-Italian border were not restricted to the coast, but extended to a point about 65 miles inland. As has always been the case when airborne troops are retained in the line in an offensive role, they experienced backbreaking difficulty in transporting their heavy supporting arms and ammunition. The fluid, rapid advance of the Seventh Army as a whole made it hard to provide the necessary vehicles for the force. As a result, the paratroopers in many cases hauled their pack 75's for 60 or 70 miles over the rugged Riviera coastline. Fortunately a number of captured enemy vehicles, together with organic transport brought in by gliders, made the movement possible.

The hostile activity encountered was at no time sufficiently stern to test the full fighting capabilities of the force.

STATISTICS

During the operation the Provisional Troop Carrier Air Division flew 987 sorties and carried 9,000 airborne personnel, 221 jeeps, and 213 artillery pieces. The sorties flown also included 407 towed gliders and carried 2,365,254 pounds of equipment into the battle area for the First Airborne Task Force. Only 1 aircraft was lost as a result of the operation itself, and losses from the period of movement from the United Kingdom to the close of the operation totaled 9. No troop carrier personnel other than glider pilots were known to have been killed; 4 were listed as missing and 16 were hospitalized. The balance of the 746 dispatched on the operation returned to their organization.

With respect to airborne units, a total of 434 United States airborne personnel were listed as killed, captured, or missing in action by 20 August. In addition 292 were hospitalized. Early reports indicated that the British Parachute Brigade listed 181 men as missing in action and 130 men hospitalized. Later reports indicated that 52 parachute troops of the British brigade had definitely been killed. Five hundred replacements had been requested by the United States parachute units and 126 by the British brigade. In the first 2 days of action, more than 1,000 prisoners had been taken by the American units and nearly 350 by the British brigade. By 23 August, this figure was well over 2,000. The total jump and glider crash injuries amounted to 283, or approximately 3 percent of the personnel involved.

Recovery of parachutes for personnel and cargo can be expected to be very low. As of 1 September, it was apparent that not more than 1,000 parachutes could be sent to the Rome base for salvage and repair. Similarly, the number of gliders which can be used again is always small. It was learned that fewer than 50 gliders of the 407 could be salvaged without excessive cost.

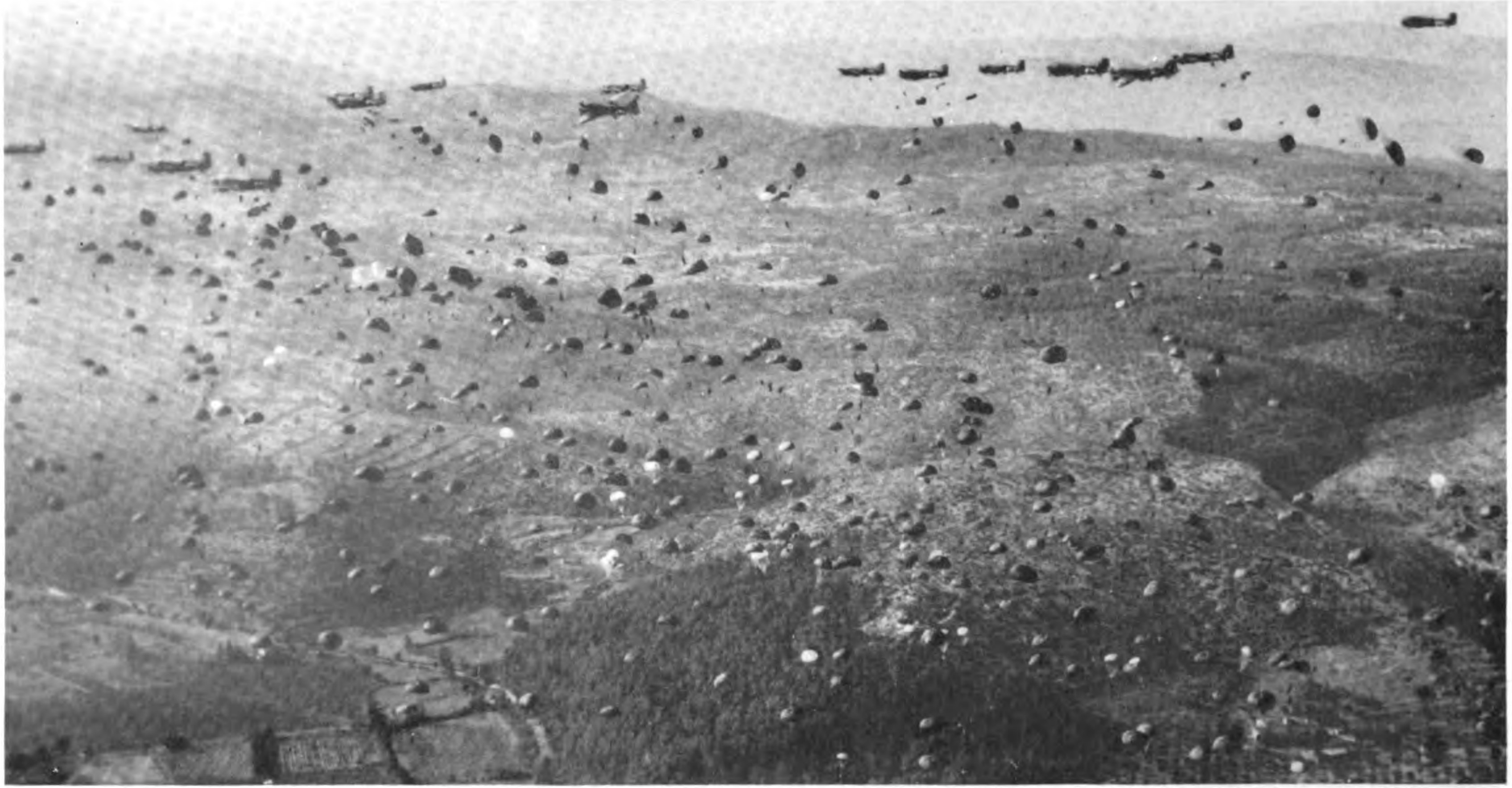
SUMMARY

Without doubt, this airborne operation was the most successful attempted up to that time in the European theater. The commanders of both the airborne and the troop carrier units and their subordinates deserve full credit for their excellent execution of the mission. The results and experiences of this operation are believed to be of value to all theaters in avoiding mistakes and improving techniques.

MAPPING AND RECONNAISSANCE

Mapping of southern France by the Mediterranean Allied Photographic Reconnaissance Wing (MAPRW), then the North African Photographic Reconnaissance Wing, began in July 1943. At that time the 15th Photographic Squadron (Heavy), a unit under the 3d Photographic Group, moved from Le Khraub airdrome, Constantine, where it was doing routine cover and mapping of Sardinia and Corsica for the North African Strategic Air Force, to La Marsa airfield in Tunisia. Here the squadron was assigned the task of mapping the Po River Valley, Albania, Yugoslavia, and southern France. A partial 6-inch and 24-inch cover was begun on southern France at that time.

During the fall of 1943, some survey mapping was accomplished in the South France coastal areas. A careful check of existing maps against these photographs proved the maps to be inaccurate, outdated, and definitely unsuitable for combat use. Cloudy, winter weather made continuous photography impossible. During these months, however, more serious attention was given to the possibility of an Allied attack in this area, and a planning staff, Force 163, was assigned to the task.



AMERICAN PARATROOPS DROP ON SOUTHERN FRANCE. A daylight drop of assaulting Yank paratroops on carefully chosen drop zones in southern France.

Original from UNIVERSITY OF MICHIGAN

At a conference between officials of Force 163 and the commanding officer of MAPRW, it was decided to assign to the 23d Photographic Reconnaissance Squadron the work of providing the required cover. On 2 February 1944 the unit moved to Alghero, Sardinia, ready to begin the work, and on 16 February 1944 a liaison officer arrived in Sardinia to coordinate matters between the 23d Squadron and Force 163. The first mission to be flown from the island was delayed by weather conditions until 15 February.

The project of covering southern France was broken down into several divisions. Phase one called for the completion of the original survey (6-inch) mapping in an area bounded by the Italian border on the east, Toulouse on the west, and 44° latitude on the north. Simultaneously, more survey mapping was to be accomplished in the block bounded by the Italian border, 3° longitude, and 46° latitude. In addition, detailed coverage was to be provided of points of military interest within the latter area. Phase two required that certain lines of communication should be covered in detail. Also to be accomplished was the detailed, 24-inch mapping of the area north from the coast to the city of Orange. The east and west boundaries of this area approximated those of Block 1, Phase 1. Certain repetitious cover, including 36-inch photography, was provided as the schedule required. Many attempts on the part of the 23d Squadron to mount satisfactorily the 36-inch camera in an F-5 type airplane met with failure, and an aircraft was borrowed from 682 Squadron, Royal Air Force, MAPRW to accomplish this work. Completion of the basic program permitted publication of accurate tactical maps of all areas named.

With this information in hand, definite plans began to appear. Interested army units asked questions which appeared in the form of specific demands, forwarded to the unit through the operations officer at MAPRW Headquarters. One question asked, for example, was: "Where would be suitable location for the landing of paratroops and other airborne units?" That was answered by photographs. The Strategic Air Force became interested in manufacturing centers, roads and railroads, marshalling yards, and similar targets; the Tactical Air Force in bridges, dams, and road junctions. Target charts were made of each desired pinpoint, and strips were flown of lines of communications.

The question of the selection of the proper beaches for the landing of troops was brought forward. Experiments by the squadron had made color photography a thing of tactical value, and this latest development was added to the preparation. A study of water depth and underwater obstacles was also accomplished through the medium of aerial photography. Strategy demanded a photo map of a definite area, so a 12-inch focal length mosaic was produced. More detailed information of a beach section was required and the squadron produced 40-inch focal length photographs. It might be noted that while these photographs were acceptable, the definition was not so clear as would be desired. However, that much had been accomplished. Closer view of beaches and other points were required. Consequently low altitude or dicing missions were flown of these areas. The work of the squadron in this regard was more successful than were the experiments with color photography. After much experimenting and remodeling, three 12-inch focal length cameras, two side obliques and one forward-pointed oblique, were installed in an F-5 and successful missions were flown. A shield was devised for the forward camera port to prevent salt spray from obscuring the lens. The resultant photographs possessed detail and clarity and were of important service.

In addition to the preceding assignments, periodic cover was required of airdromes, harbors, and marshalling yards for the purpose of keeping a close check on enemy activity. Several times during the winter and spring of 1944 bomb damage assessment sorties were flown.

From the schedule outlined, it was obvious that one squadron could not hope to complete the necessary work in the required time. Other units, therefore, were attached to the 23d Squadron for operational purposes, to assist in obtaining the essential cover the 2/33d Squadron, French Air Force, MAPRW covered the northern sector of the survey mapping and photographed some of the enemy lines of communication. A flight from 682 Squadron, Royal Air Force, MAPRW photographed most of the roads and many of the target chart areas.

Enemy opposition to photo operations steadily increased over southern France. Weather conditions were another hampering factor. The actual flying itself demanded skill and accuracy beyond normal requirements. Other troubles introduced themselves. For instance, on one flight a pilot discovered intervalometer trouble in his ~~camera but~~ continued on course, taking pictures manually with such a degree of skill that the photo interpreters were unaware of the mechanical failure.

Flying and aerial photography by no means sums up the work of the 23d PRS organization. Each mission was plotted by members of the unit, and first phase interpretation was given of all suitable targets. The squadron's photographic laboratory processed over a half million prints for this operation alone, some of which were turned out in such record time that immediate use was made of certain sorties. Members of the engineering and camera technician staffs introduced variations and inventions which improved the quality of the photographs and the serviceability of the aircraft. The close cooperation which existed between communications, operations, and intelligence permitted the flying of all new demands and the return of the information to the demander in record time. The ground echelon's efficiency is demonstrated in the fact that the base of operations was changed in the middle of the preliminary operation, without the loss of a single flight. In spite of the move, a full day's operation was carried out. The move took place on 12-17 July 1944 when the squadron left Alghero, Sardinia, for Borgo Airfield near Bastia, Corsica.

In preparation for the Seventh Army operation, the 3d Photographic Group, including group headquarters proper and the 5th Combat Mapping Squadron, moved to Borgo Airdrome, Corsica, 12-18 July 1944. The 5th Combat Mapping Squadron, from its new location, continued bomb damage assessment cover for the Tactical Air Force, while the 23d Squadron was assigned to tactical reconnaissance for the Seventh Army. A detachment of the 23d Squadron was assigned to the Seventh Army to go into southern France with the first forces, while the remainder of the squadron was scheduled to go in on D plus 4 and D plus 11.

A first and second phase and bomb damage interpretation section, set up in 3d Photo Group headquarters, began to operate entirely for the Tactical Air Force. TAF headquarters, located only a few miles away, made speedy requests and coordination possible. Sorties flown in the morning and early afternoon were processed immediately by the laboratories, and by late afternoon the interpreters began to send out their reports.

THE AIR COMMAND POST AFLOAT

Offensive air activity during the invasion was scheduled and controlled from the U. S. S. *Catoctin,* Amphibious Force flagship for the over-all operation. Here XII Tactical Air Command (Advance) operated, charged with air protection of the Fleet and the beaches in the assault area, as well as with the continuation of its fighter-bomber and reconnaissance work against enemy ground forces. Its aircraft were based in Corsica, 150 miles away.

The *Catoctin* was a stand-by fighter direction ship for air defense. FDT No. 13 (fighter direction tender), a British LST, was responsible for control of defensive fighters on patrol over the assault area. HMS *Ulster Queen* was another stand-by fighter direction ship.

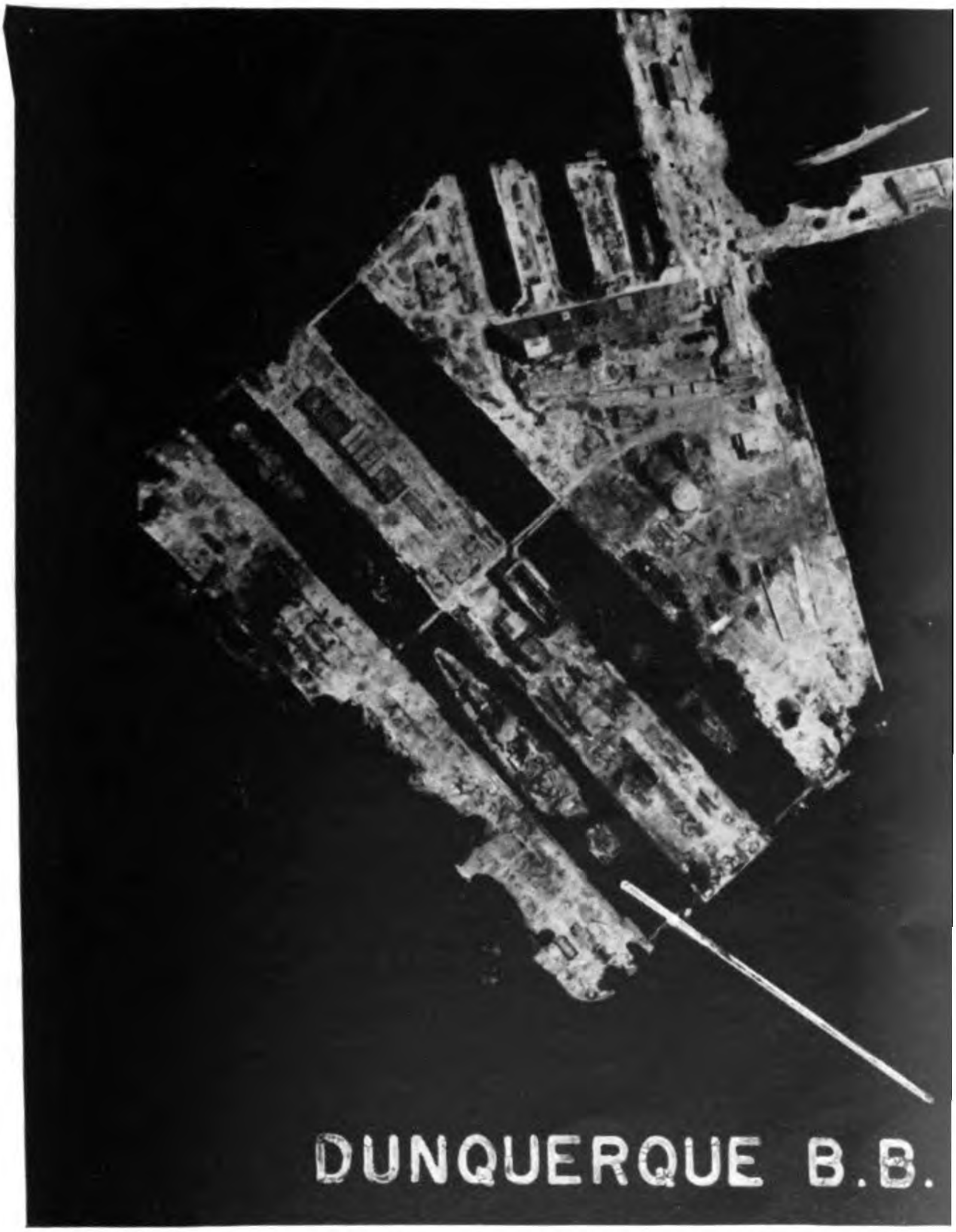
The 2d Air Combat Control Squadron (Amphibious), activated as an amphibious fighter control squadron to serve aboard headquarters ships, handled air control for the Air Task Force commander aboard the *Catoctin* during the assault phase. This unit reported on 16 March 1944 to the Commander of the U. S. Eighth Fleet, when invasion plans were already under way.

For the control of the numerous land-based aircraft necessary to the program, the communications and air control equipment on board were enlarged into a Joint Operations Room (JOR), where both naval officers and those of the 2d Air Combat Control Squadron were able to perform their various functions, including: control of air cooperation missions as directed by the air commander; standby control of fighter defense of the assault area as directed by the air defense commander; issuance of air raid warnings as directed by the naval commander; collection, evaluation, and dissemination of air information to all responsible officers.

The flexibility obtained by modifying the original JOR facilities was demonstrated by the fact that the exercise of control of air cooperation missions was assigned as an additional duty less than a week before D-day, while the further duty of issuing air raid warnings was assumed during D-day. One week before D-day a full scale exercise, placing particular emphasis upon those communications which would be available to the air commander, proved highly valuable.

The decision to assign the control of offensive fighter-bomber missions to the flagship, while control of defensive fighter patrols remained

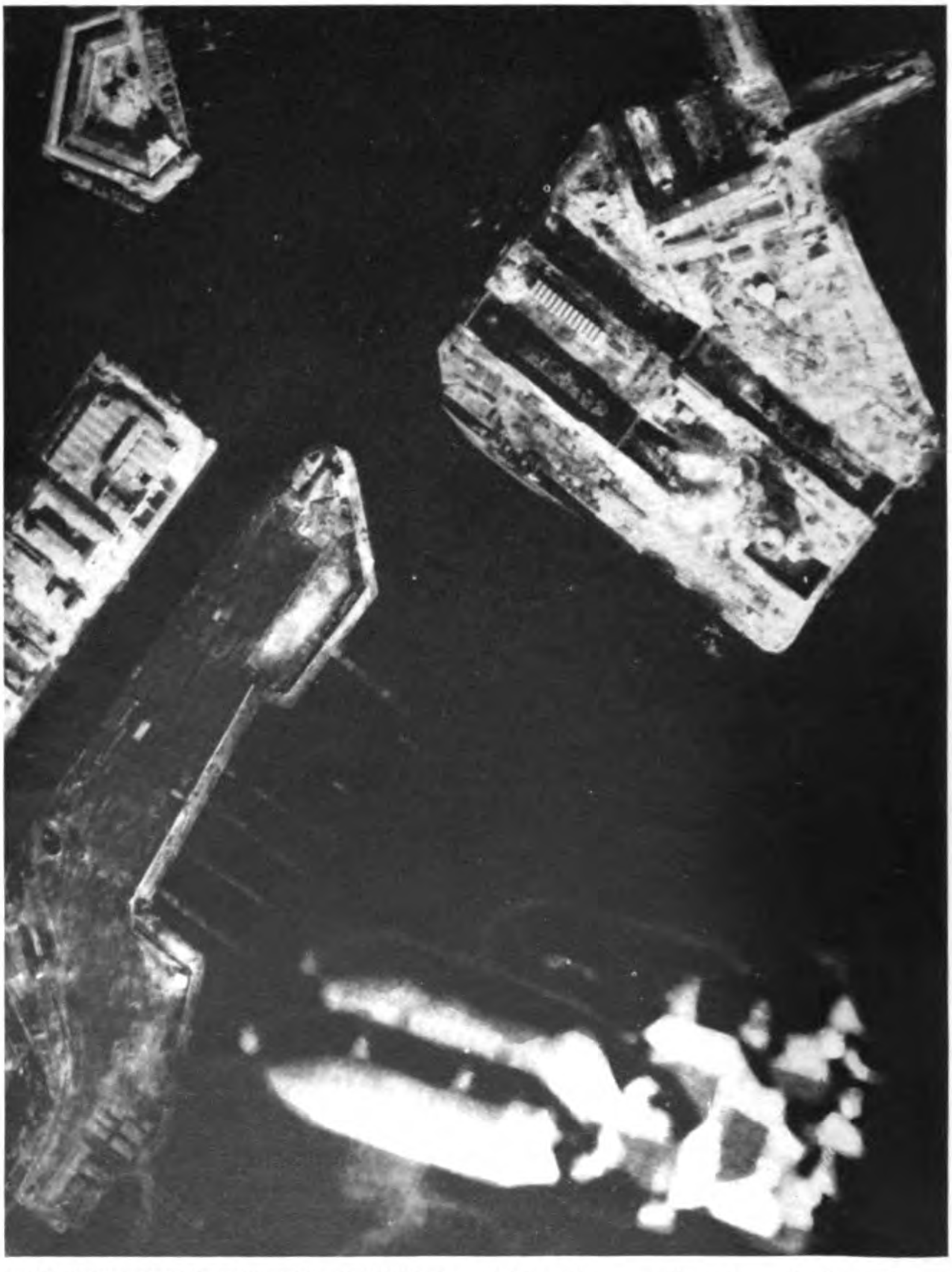
with a fighter direction ship, proved to be sound. In the almos
total absence of enemy air opposition, the supporting aircraft so con



ATTACK ON TOULON HARBOR. While the prime objective of operations against Toulon was the destruction of submarine pens and submarine afloat, additional widespread damage was inflicted upon harbor installation and naval vessels which, while rendered unseaworthy by the French when th fleet was scuttled at Toulon, could be used as a platform for heavy nava guns. Outstanding among such vessels was the battleship *Dunkerque,* show in this reconnaissance photograph.

trolled were able to give welcome aid to the quick establishment of the beachhead and the speedy advance of the ground forces.

The duties of the JOR as outlined above were operationally, and more specifically, broken down into four main subdivisions: control of tactical reconnaissance and fighter-bomber missions; furnishing information on movements and status of aircraft; air raid warning and



ATTACK ON TOULON HARBOR. This photograph, taken during the attack on the *Dunkerque,* shows direct hits being scored on the vessel, with another cluster of bombs on its way.

alerting the fleet; stand-by for fighter direction. How these duties were discharged, and what they involved, may be briefly noted here.

Control of Tac/R and fighter-bomber missions

Tac/R flash reports were furnished by pilots of two Tac/R squadrons flying Corsica-based Spitfires and P–51's, by carrier-based Spits, and occasionally by returning fighter-bomber missions. These missions, scheduled by XII TAC, reported name and mission number to the *Catoctin* when entering the area. This information was placed on the Tac/R status board and the flight told to proceed with its next assignment.

When flyers spotted anything of interest the information was immediately called in to the deputy controller, who made out a standard report and passed it to the XII TAC operations officer for action. If accepted, the attack order number of the fighter-bomber mission to which the new target was assigned was placed on the report, which

ATTACK ON TOULON HARBOR. This is what the bombs did to the *Dunkerque*. It also exemplifies the tremendous damage resulting from direct hits on naval vessels by heavy-caliber bombs. The entire drydock area had been rendered unserviceable, and extensive repairs were necessary before any appreciable activity could be resumed.

was given back to the deputy controller for transmittal to that mission when it checked in.

Fighter-bomber missions were flown by P-47's and P-38's based in Corsica and by carrier-based Hellcats and Wildcats. These missions, laid on by XII TAC, were given both a primary and an alternate target. They reported in to the *Catoctin* on Channel AC-3, giving name and attack order or mission number, which was immediately placed on the Fighter-Bomber Status Board. They were then told to attack either their primary or their alternate target, or to proceed on a special mission. This was necessary because the speed of the advance sometimes placed either or both of the briefed targets inside the bomb safety line. On other occasions, the special mission was given priority over the regular mission.

These special missions were usually against enemy transportation and were targets called in by Tac/R planes or received by XII TAC from the ground forces or other sources. The targets were given to the airborne planes in the clear since, due to the speed of operations, security did not demand encoding. Locations were given in Army grid, air grid, or by geographical references. On some occasions, if the Tac/R flight which reported the target was still in the vicinity, it was directed to lead the bombers to the target.

Here are a couple of examples of how this system worked. Spurtle Red Leader checked in and was told to proceed on his mission of armed recce. Three minutes later, Parkland Red Leader, returning from a bombing mission, called in a target of 20-plus boxcars and engines near Pertuis, which he could not take himself. This target was given at once to Spurtle Red Leader, who was told to call Parkland Red Leader on the same channel for directions. This was done and the target was successfully hit.

Alpaca Red Leader, a carrier-based Tac/R mission, called in a target of 20-plus armored vehicles east of St. Maximin which was given to Mallard Red, a carrier-based Hellcat mission of fighter-bombers just reporting into the assault area. Result—65 armored vehicles and troop carriers shot up. Confirmation of this was received a few minutes later when another Tac/R flight reported between 50 and 60 vehicles destroyed in that locality.

If any doubt remains about results from these missions against enemy transport, consider what happened on 10 other such attacks:

20-plus M/T destroyed near Digne
15-plus M/T bombed, one flamer, near Aix
150-plus RR cars hit
20 cars bombed, 30-car train strafed, north of Lake Bret
30 RR cars hit outside Avignon
45 boxcars left burning, two engines destroyed, near Cavaillon
1 turntable and 15 RR cars destroyed on D–9
2 barges bombed and strafed 20 miles west of Marseille
RR bridge and train bombed, 2 M/T hit north of Tarascon
10-plus M/T hit southeast of Avignon

During the four and one-half days the *Catoctin* was in control, approximately 300 fighter-bomber missions operated in the area. Of these, about 50 were antitransport missions given out by the controllers at the order of the Commanding General, XII Tactical Air Command.

Furnishing information on movements and status of aircraft

The JOR acted as a clearing house for all information concerning air operations in the assault area. This included movements of hostile aircraft; status of patrols, fighter-bomber, medium and heavy bomber, Tac/R, carrier-based aircraft, and night fighter missions; and results of these missions when they could be obtained through R/T interception. This information was obtained from six principal sources:

1. Monitoring of Operational Channels. All operational channels were manned by deputy controllers or monitors, and movements of aircraft were recorded on various status boards or in logs. A list of all call signs to be used in the operation was prepared in advance and aided in identifying missions.

2. Movements Liaison Officer. The MLO had advance information on most friendly missions entering or passing through the area. This included attack order number, time, number and type of aircraft, and objective. This information was supplied by XII TAC Operations aboard for the missions they scheduled, by signals received from the Strategic Command based in Corsica and Italy, and by the courier liaison officer.

3. Aircraft Carrier Liaison Officer. This officer advised the senior controller of the status of carrier-based aircraft, missions entering area, and the results of completed missions. He also passed back to the carriers requests for additional missions or the assignment of new targets. He was in constant HF/RT contact with the carrier task

force. This was invaluable, as carrier-based operations have many problems not common to land-based aircraft.

4. Radar. All information on air movements, both friendly and hostile, received on the filter table was passed to and displayed on the operations table and was available to all officers in the JOR.

5. Radio Intercept Service. Due to light hostile activity, there was little information from this source. However, more activity was reported than actually came into the area, despite considerable interference from W/T circuits.

6. Visual Observers. One visual controller and a recognition officer were located on the visual platform topside. They had a direct line to the senior controller and kept him advised of the movements and identity of all aircraft within visual range.

The information obtained from these sources was posted on various status boards in the JOR, entered in various logs, and furnished to interested persons as requested, or as conditions demanded.

Air raid warning and alerting the Fleet

This duty, originally assigned to FDT #13, was assumed by personnel aboard the *Catoctin* on D-day evening. Twenty-five red alerts were called in all. On nine of these alerts, hostile aircraft were known to be in the area, although only three of them attempted attacks. Alerts were kept at a minimum to avoid delay in unloading the ships.

Alerts and warnings of approaching flights, both hostile and friendly, were called to the Fleet over TBS by the naval air officer, whose position was next to the senior controller where he could overlook the operations table. All air information was available to him, and he in turn could keep the senior controller advised of all pertinent naval information. Through his familiarity with the ship, its officers, and the flag officers, he gave advice and help in many problems which arise when Army and Navy work together.

Stand-by for fighter direction

Since the USS *Catoctin* was second stand-by director, all information concerning the status of defensive patrols was kept current on the patrol status board. All operational channels were manned and monitored by controllers sitting in front of the operations table, where the complete air picture was always displayed. Thus fighter direction could have been taken over without disruption of control. In fact, on several occasions control of certain channels was actually taken over while the FDT was temporarily off the air on these channels.

At 1400 on D plus 4, the control of Tac/R and fighter-bomber missions was turned over to XII TAC Advance ashore. At 1200 on D plus 7, control of fighter patrols was turned over to the 64th Fighter Wing SOR ashore by FDT #13, and the USS *Catoctin* ceased to be a stand-by.

Simultaneously the responsibility for air raid warning was also assumed by the 64th Fighter Wing ashore. The rebroadcasting of these warnings to ships in the harbor was made the duty of the Combat Information Center of the USS *Catoctin.*

It is of interest that, even though the USS *Catoctin* could have handled fighter direction as well as fighter-bomber and Tac/R control in an emergency, it was evident to all concerned that the separation of these activities was beneficial to the smooth working of the plan. The mobility of a separate fighter direction ship and the value of the possible additional equipment must be recognized.

On several occasions there were more transportation targets than there were aircraft to take them, for the following reasons:

1. Bad weather at base prevented missions from arriving in the assault area as scheduled.

2. Carrier-based aircraft, although in close proximity, were all out on other missions or otherwise unavailable.

3. The speed of the advance made the distance involved too great to employ patrols which came up with bombs for transportation targets. Their fuel would have been inadequate for both the mission and the patrol.

FILTER

Air opposition was very light and at no time afforded a fair test of the air defense system. From D-day through D plus 6, the following tracks appeared on the filter table:

Total number of tracks	1,538
Total hostile tracks	9
Total unidentified tracks	503
Total made hostile	2
Total made friendly	203
Total remaining unidentified	298
Total friendly tracks	1,231

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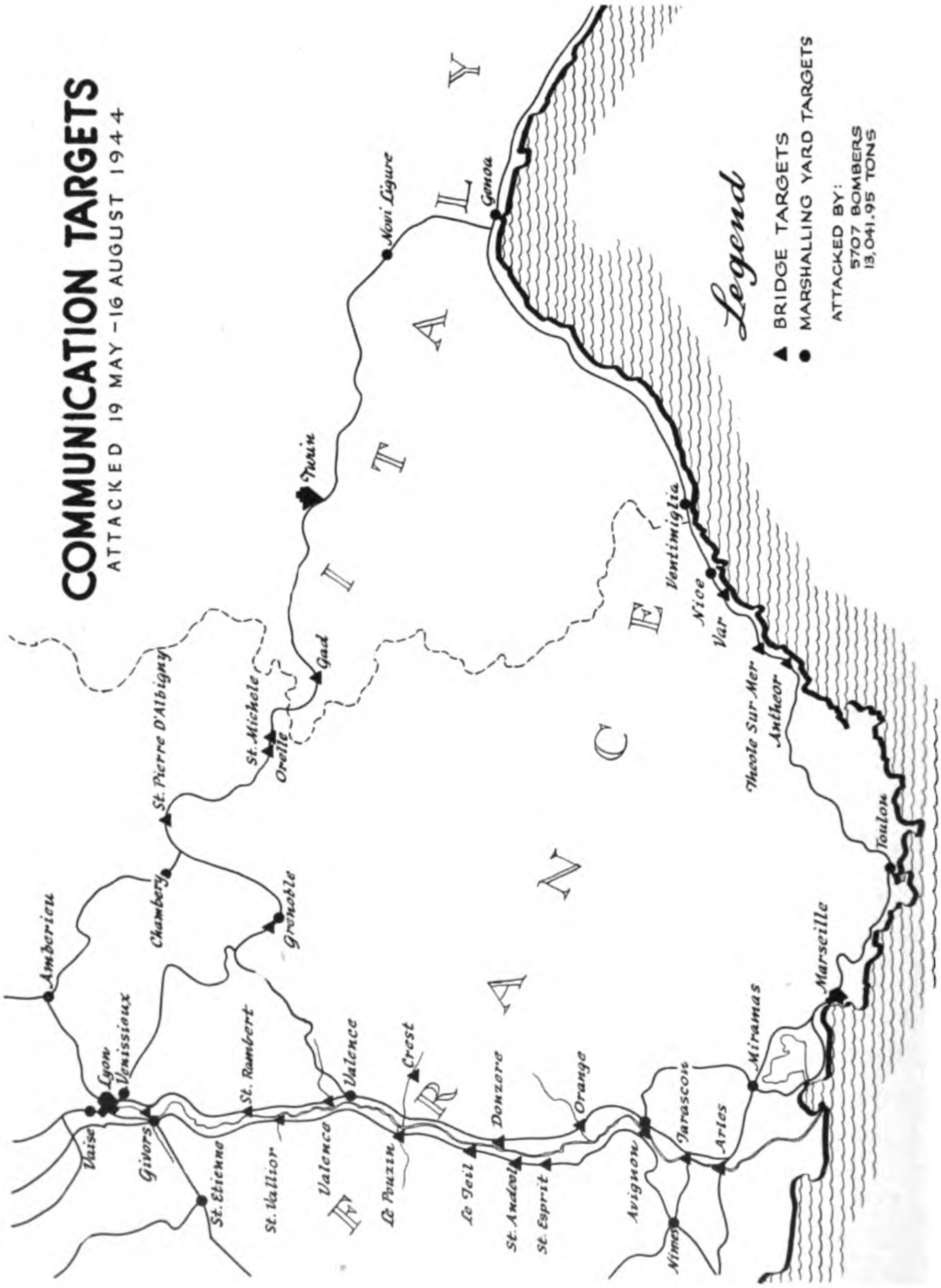


COMMUNICATION TARGETS

ATTACKED 19 MAY – 16 AUGUST 1944

Planes of two fighter groups assigned to XII TAC for this operation did not carry IFF equipment and were frequently plotted as unidentified tracks, which caused unnecessary alarm and alerting of the Fleet. On every occasion that hostile planes were known to be in the area, some indication of their presence was passed by the Radio Intercept team. Information reached the filter table from: Radar (USS *Catoctin*), Naval Radar Guard, FDT #13 Track Broadcast, Ground Control Intercept Reporting, Ops #2 Ashore Track Broadcast.

There were sufficient radar and reporting facilities, but land echoes caused by the rugged terrain often made it impossible to obtain continuous tracks and at times even to detect targets. One GCI, the FDT #13, and two or three Navy ships were the effective radar sources during the initial phase of the operation. Ample radio channels were allotted to make the radar reporting system work. Although the effectiveness of the channels varied from time to time, there were always enough usable channels for reporting. If the channels became unsatisfactory as the assault progressed, information was passed over prearranged stand-by channels, which worked very well. There were three main reporting nets.

Naval Radar Guard net

There were 16 ships in this net, of which four were appointed guard ships and four were stand-bys, the others being ready if called upon. The FDT #13 passed unidentified and hostile tracks over this channel when difficulty was experienced on the track broadcast channel.

Ground Control Intercept Reporting

Four GCI stations were scheduled to report on three VHF channels and one HF channel. Only two receivers and one transmitter were available for the three VHF channels, so the receivers were changed from time to time among them to get the best radio reception and information. There was too little traffic to demand separate VHF channels for each GCI. Indeed, better liaison could have been maintained if all the GCI stations had been on the same channel. The station scheduled to report on HF channel had difficulty getting set up ashore. When it did, contact was not good, so that the less satisfactory W/T had to be used in place of R/T.

Track Broadcast

Due probably to an unfortunate allocation of frequencies rather than to poor radio discipline, a number of stations blocked the HF track broadcast channel, rendering it useless much of the time. In one 5-minute period, nine station calls were heard, some in French, that did not belong on this frequency. After the FDT #13 began to call tracks over the FM and VHF frequencies, this channel was no longer necessary and was secured.

CONTROL OF DEFENSIVE PATROLS

As has been said, the FDT #13 was the fighter control ship, its duty to control defensive patrols over the beaches and to broadcast all unidentified and hostile tracks. An air-sea rescue team was high-speed launches was attached to this ship. For lack of space in the control room they operated from the visual platform topside. However, since the controllers were in constant contact with the aircraft and had a better over-all picture of the situation, they usually handled the operational matter themselves.

The FDT #13 was a British-manned, converted LST with a mixture of U. S. and British equipment. The radar equipment consisted of a CGI and a Type 11, the presentation of which could be remoted to the air control room. The VHF transmitters and receivers were BC–639 and BC–640 with RM 26–A control boxes. However, the toggle switches were disconnected and press-to-talk handsets were used, which proved better. The ship had no SG radar or surface search radar capable of picking up low-flying aircraft. Had this equipment been at hand, the one night attack experienced might have been detected in time. Fortunately no damage resulted.

Daytime control was handled primarily by 64th Fighter Wing personnel. The number of aircraft on the four patrols varied from 28 to 32. However, after D-day the schedule was not adhered to and at times there was a shortage of aircraft. Night fighter activity was handled by British personnel, with one U. S. controller on duty to handle all other matters. There were four to six night fighters on patrol, and some of these were handed over to the various GCI stations whenever conditions permitted.

An AAA liaison officer on the ship maintained radio communication with his batteries ashore. Information on hostile raids and friendly flights was passed by him to his shore batteries, which in turn gave him any information they had. In a few cases where our own night fighters entered the Inner Artillery Zone they were fired upon. Except at dusk, when identification was difficult, the control of AAA fire was good, and no friendly aircraft was shot down.

* * *

It is obvious that a decided change has taken place in the tactics used by the AAF in amphibious operations since the summer and autumn of 1943.

In the invasion of southern France, fewer than 30 fighter aircraft on an average were kept over the assault area for protection of the Fleet and the beaches. This is in contrast to the 60 to 80 aircraft protecting the landings at Salerno, a smaller operation in a smaller area.

The answer lies in the tremendous air supremacy the Allies built up in that year through effective *offensive* air warfare. Thus, *offensive* air warfare was conducted from the USS *Catoctin,* in contrast to *defensive* air warfare controlled from headquarters ships in previous operations.

The excellent cooperation and coordination among the several services and forces involved, along with the ample facilities of the joint operations room, made a success of the Air Command Post Afloat.

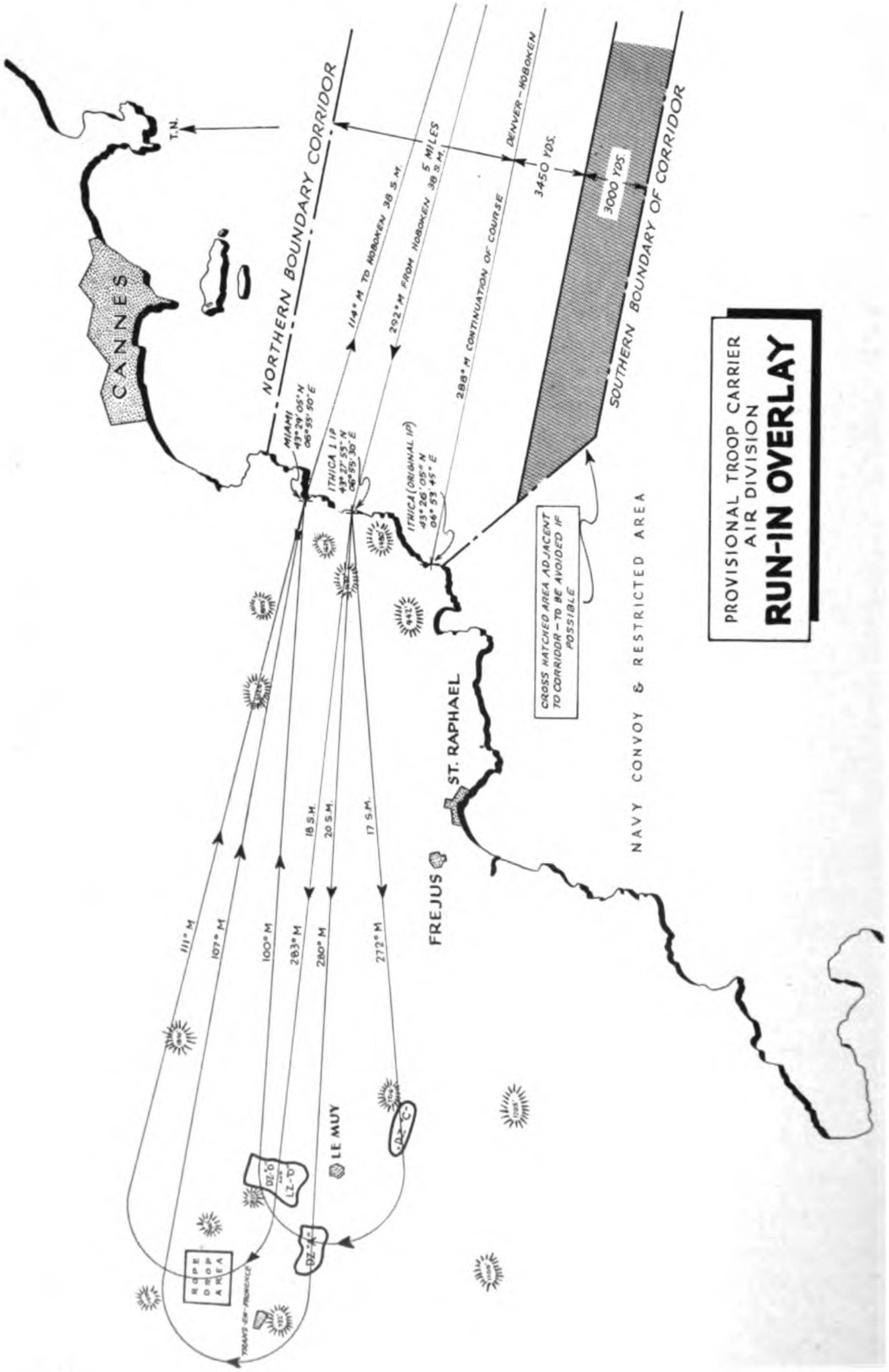
SUMMARY OF MASAF OPERATIONS

Air operations by the Mediterranean Strategic Air Force in cooperation with the successful landing by Allied troops on the southern coast of France, 15 August 1944, commenced on 19 May and continued through 16 August. During this 3-month period the Fifteenth Air Force dispatched 12,451 aircraft by day, 205 Group (RAF) sent 330 aircraft by night, and between them they dropped more than 18,000 tons of bombs on 113 specific targets, not including numerous fighter attacks on rolling stock, M/T, and targets of opportunity.

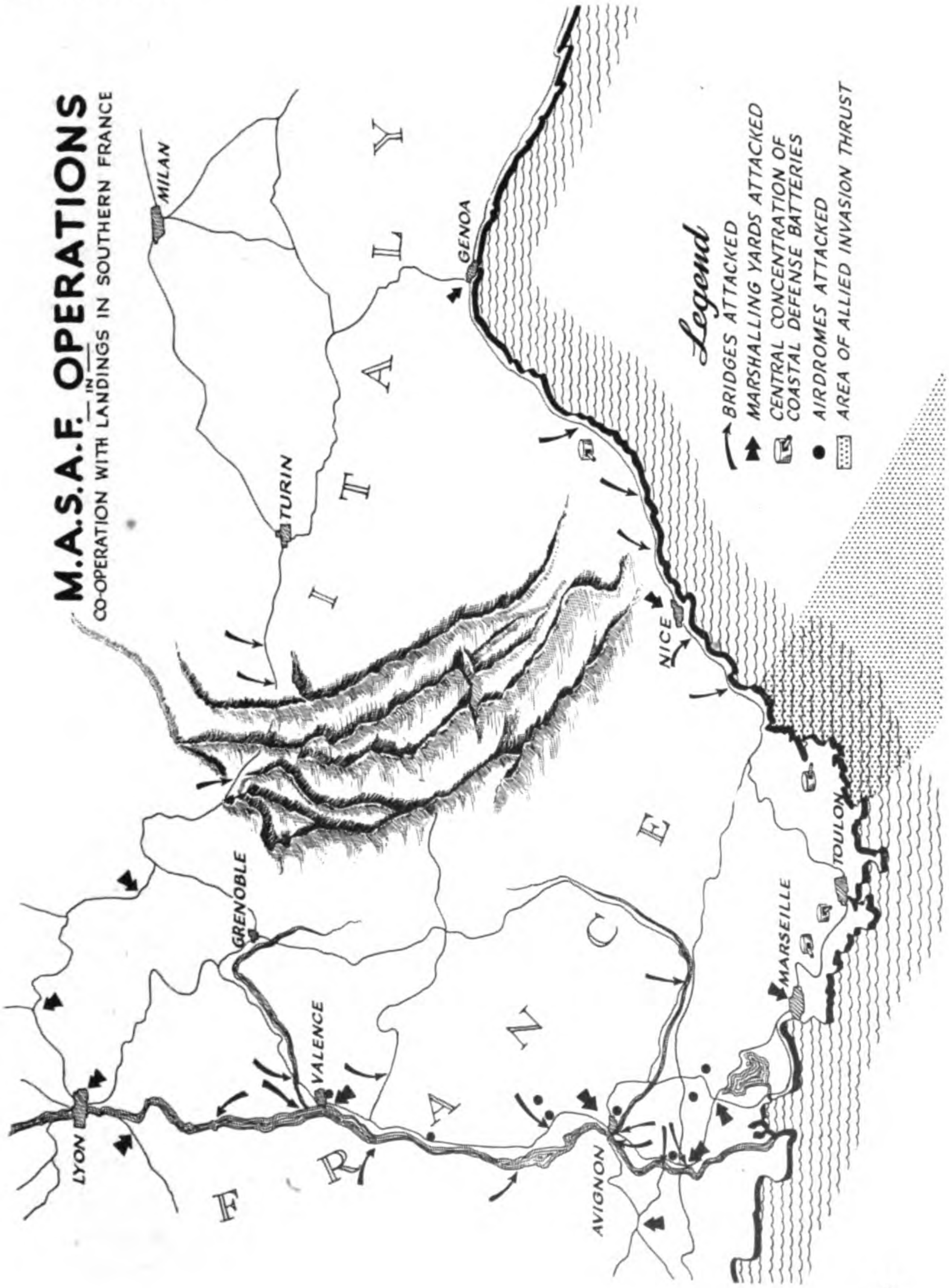
MASAF's air attacks in conjunction with the landings may be divided into three general categories—lines of communication, counter air, and close cooperation; although as D-day became imminent there was a certain amount of overlapping, as in the case of bridge targets close to the coast attacked just before, during, and on the day after the actual landings, which may be considered as both close cooperation and communications targets.

The great weight of effort from 19 May to D-day was directed against the enemy's lines of communication, and included effective attacks on marshalling yards as far north as Lyon, key bridges carrying north-south traffic in the Rhone valley, shipping, oil storage facilities, and actual wire communications centers. More than 13,000 tons of high explosives were dropped during the course of these attacks.

Bombers and fighters operated on a smaller scale against the several air bases in the general Marseille area, where the enemy had dispersed his bomber force. From these bases, reconnaissance flights and antishipping attacks were carried out, principally by Ju–88's.


PROVISIONAL TROOP CARRIER AIR DIVISION
RUN-IN OVERLAY
T.N.
CANNES
NORTHERN BOUNDARY CORRIDOR
SOUTHERN BOUNDARY OF CORRIDOR
5 MILES
3450 YDS.
3000 YDS.
DENVER–HOBOKEN
114° M TO HOBOKEN 38 S.M.
292° M FROM HOBOKEN 38 S.M.
288° M CONTINUATION OF COURSE
MIAMI 43° 29' 05" N 06° 55' 50" E
ITHICA 1 IP 43° 27' 55" N 06° 55' 30" E
ITHICA (ORIGINAL IP) 43° 26' 05" N 06° 53' 45" E
CROSS HATCHED AREA ADJACENT TO CORRIDOR – TO BE AVOIDED IF POSSIBLE
NAVY CONVOY & RESTRICTED AREA
ST. RAPHAEL
FREJUS
18 S.M.
20 S.M.
17 S.M.
111° M
107° M
100° M
283° M
280° M
272° M
LE MUY
"O-21"
"O-20"
"DZ-C"
"DZ-A"
ROPE DROP AREA
TRANS-EN-PROVENCE

Commencing on 12 August, 3 days before the landings were to be made, an intensive aerial assault was launched in an effort to knock out the enemy's coastal defenses and to reduce as far as possible his ability to inflict serious losses on the assault troops and matériel. On 12, 13, and 14 August, 1,652 heavy bombers dropped 3,839.2 tons of bombs on 40 gun positions in the Marseille-Sete-Toulon-Savona-Genoa area in a series of attacks coordinated with the Tactical Air Force. Fighters swept the area, attacking coast-watcher and radar installations.


M.A.S.A.F. OPERATIONS
IN CO-OPERATION WITH LANDINGS IN SOUTHERN FRANCE
ITALY
FRANCE
MILAN
GENOA
TURIN
NICE
TOULON
MARSEILLE
GRENOBLE
VALENCE
LYON
AVIGNON
Legend
BRIDGES ATTACKED
MARSHALLING YARDS ATTACKED
CENTRAL CONCENTRATION OF COASTAL DEFENSE BATTERIES
AIRDROMES ATTACKED
AREA OF ALLIED INVASION THRUST

Accomplishing the first heavy-bomber mass night take-off in Fifteenth Air Force history, close to 400 B–17's and B–24's dropped 500 tons of 100-pound bombs on the beaches in the Toulon-Cannes region. The first wave attacked between 0700 and 0730 hours, half an hour before the ground troops landed and secured the beachheads. The success of these operations may be measured in terms of gun positions knocked out and the notable lack of resistance, ground and air, met by the assault waves, enabling them to gain assigned objectives rapidly and with minimum loss of life and matériel.

COMMUNICATIONS

In 3 days, 25–27 May, 14 strategically located marshalling yards in the Marseille-Toulon-Lyon area were successfully bombed by 1,393 Fifteenth Air Force heavies. These yards served rail traffic from Paris, the upper Rhone Valley, industrial centers of western Germany, and Toulouse and other parts of western France—traffic which passes through them en route to southeastern France and Italy, and westward into the littoral zone of southern France.

Highly successful attacks at this time inflicted severe damage upon repair facilities and locomotive roundhouses, particularly significant because the bulk of southeastern France depends upon these yards. To carry out essential repair and maintenance activities after these attacks, yards in other areas of France had to be used at a time when intense Allied bombardment from the United Kingdom had rendered many of them completely or partially inoperative and had seriously disrupted the entire French rail net. These blows also served to impede the flow of military supplies within France proper, as well as two-way movement between France and Italy.

By D-day it was apparent that coordinated attacks by MASAF and MATAF had all but isolated the beachhead area (Cannes-Marseille) from every direction. The only available route from the west was over the one remaining bridge across the Rhone from Lyon to the sea at Avignon, while direct traffic from Lyon was blocked, as were the routes across the French-Italian frontier. The only other way open was the line Grenoble-Marseille. The enemy found it all but impossible to bring reinforcements into the newly secured and rapidly expanding Allied beachhead, and our troops surged forward at a rate made possible by the bombardment of German communications.

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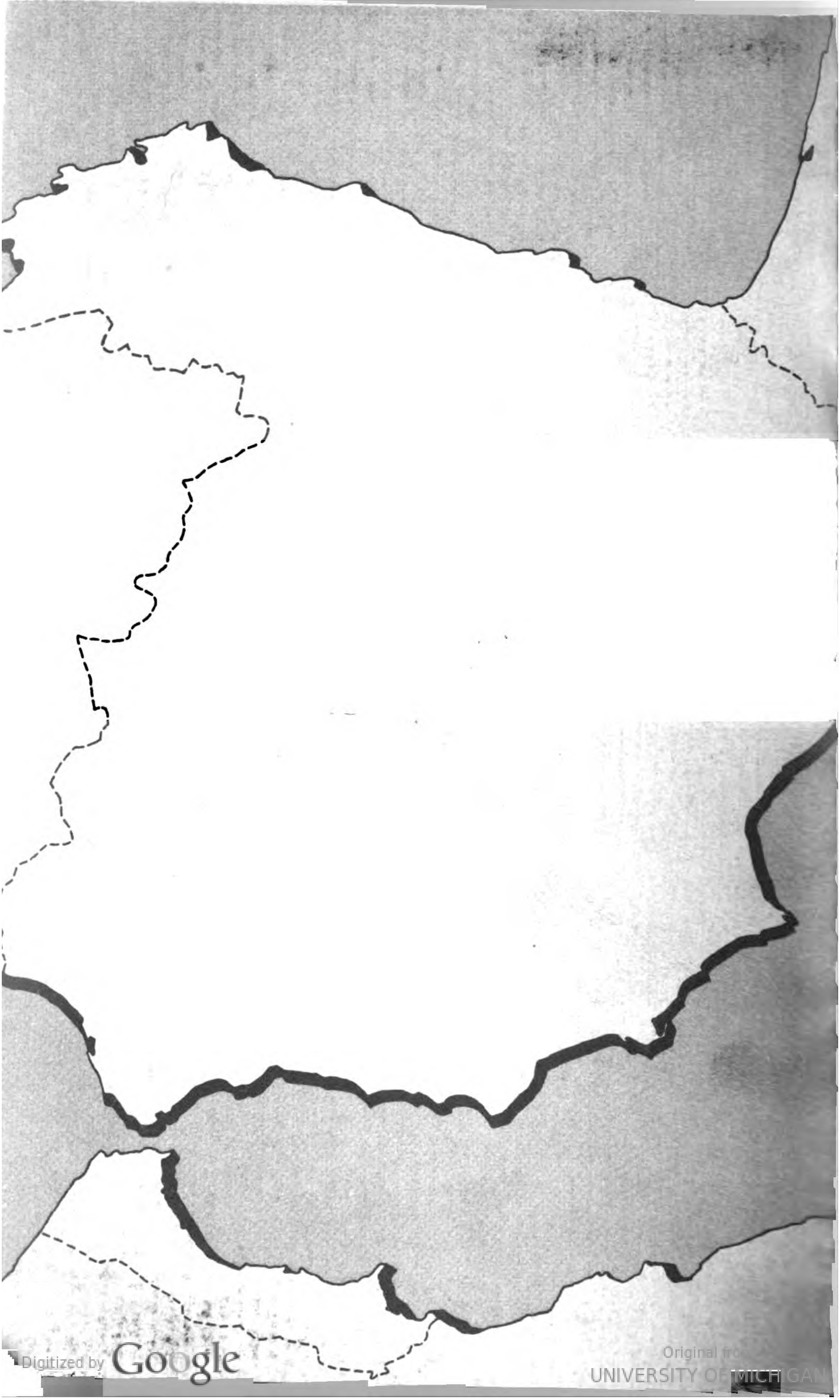

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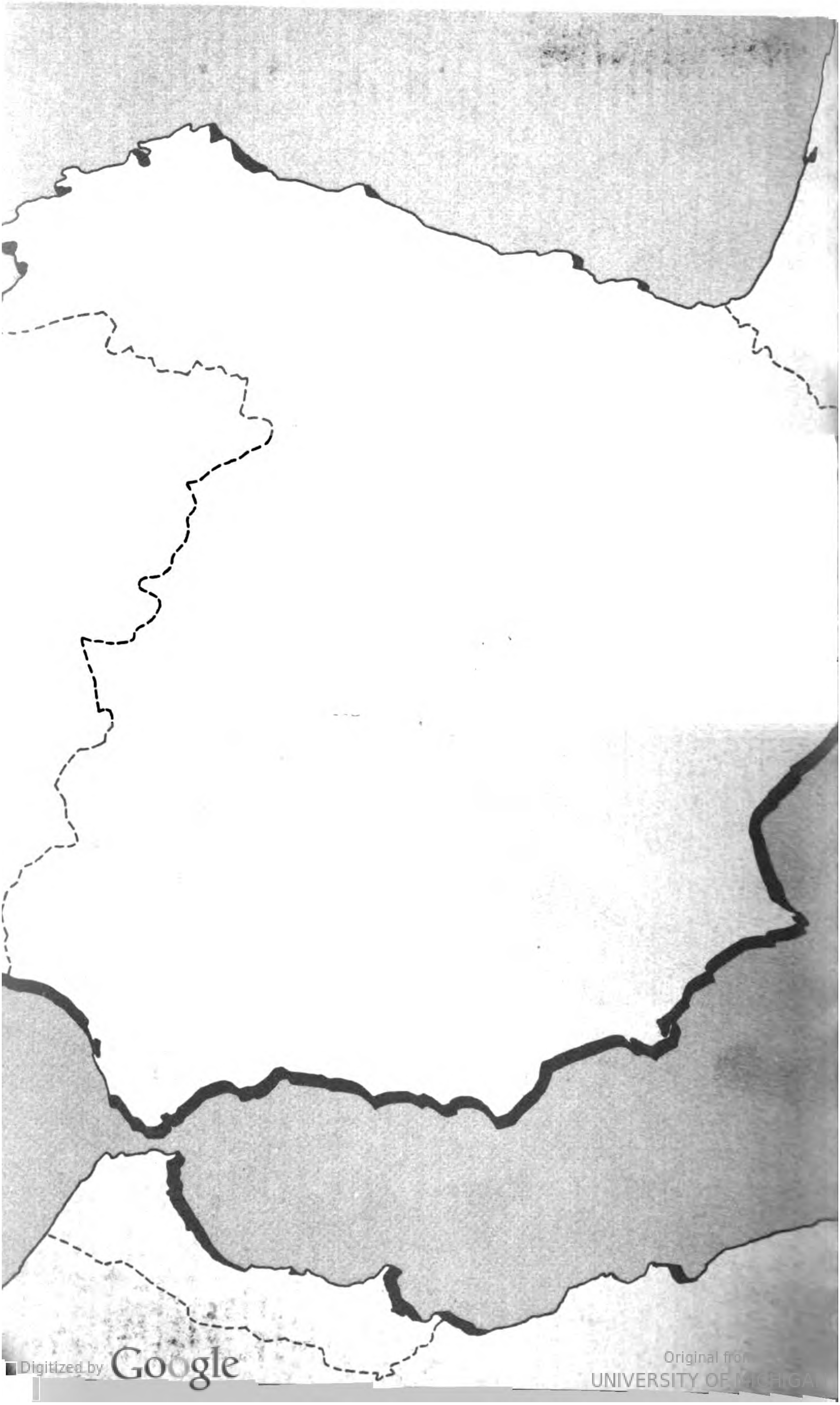
Sunday Punch
IN
NORMANDY



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Sunday Punch
IN
NORMANDY

Wings at War Series, No. 2 [redacted]

Sunday Punch in Normandy

THE TACTICAL USE OF HEAVY BOMBARDMENT IN THE NORMANDY INVASION

An Interim Report

Published by Headquarters, Army Air Forces
Washington, D. C.

Office of Assistant Chief of Air Staff, Intelligence
From Reports Prepared by Eighth Air Force

FOREWORD

THIS is the second in a series of interim reports published by Headquarters, Army Air Forces. The original manuscript was prepared by Deputy Chief of Staff, Operations, Eighth Air Force, on the basis of official records and firsthand observation. This text has been abridged and edited in order to provide for combat personnel in all theaters a succinct summary of the planning and execution of the tactical use of heavy bombardment in the invasion of Normandy.

The conscientious and able work of staff personnel in the theaters makes possible the publication of this series, the intent of which is to cover the more important campaigns and individual missions in all theaters of operations.

Comments and criticisms are invited. They should be addressed to: The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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OFFICIAL PHOTO USAAF

Lt. Gen. Carl Spaatz, Commanding General, United States Strategic Air Forces

The Tactical Use of Heavy Bombardment in the Normandy Invasion

Planning The Operation

ENGLAND was bulging with troops. Along the narrow lanes dispatch riders dashed. Tanks lumbered over the roads; assault craft were piled at distribution points; frequent and elaborate exercises were being staged. Already there had been practice alerts, when all personnel were required to be at their bases. Newspapers speculated, the German press and radio exulted that the Allies had missed the most favorable tides and could not assault for another month. Tension ran high.

For months there had been good-natured badgering between members of the Eighth and Ninth Air Forces, who in turn had banded together when assailed by ground force personnel. Now they were beginning to realize that they were all members of a bigger team, an outfit which would soon be called upon to conduct history's greatest military operation.

Forgotten now were differences between strategic and tactical, between ground and air, between Army and Navy, between Americans and their Allies. All were welded into one compact, devastating fist, set to deliver the Sunday punch.

There are more facets to the Normandy invasion than to a finely cut diamond. Volumes and sets of volumes will be written about it. This booklet considers only one, the tactical employment of the Eighth Air Force heavy bombers before and during the invasion and the resultant change in the disposition and use of Eighth Air Force fighters.

It required careful planning. Here are shown the planning steps, with the problems which arose and demanded workable solution. Also included is a summary of Eighth Air Force operations from D minus 4 to D plus 11.

Like the other participating components, the Eighth Air Force, commanded by Lt. Gen. James H. Doolittle, did its part in highly creditable fashion.

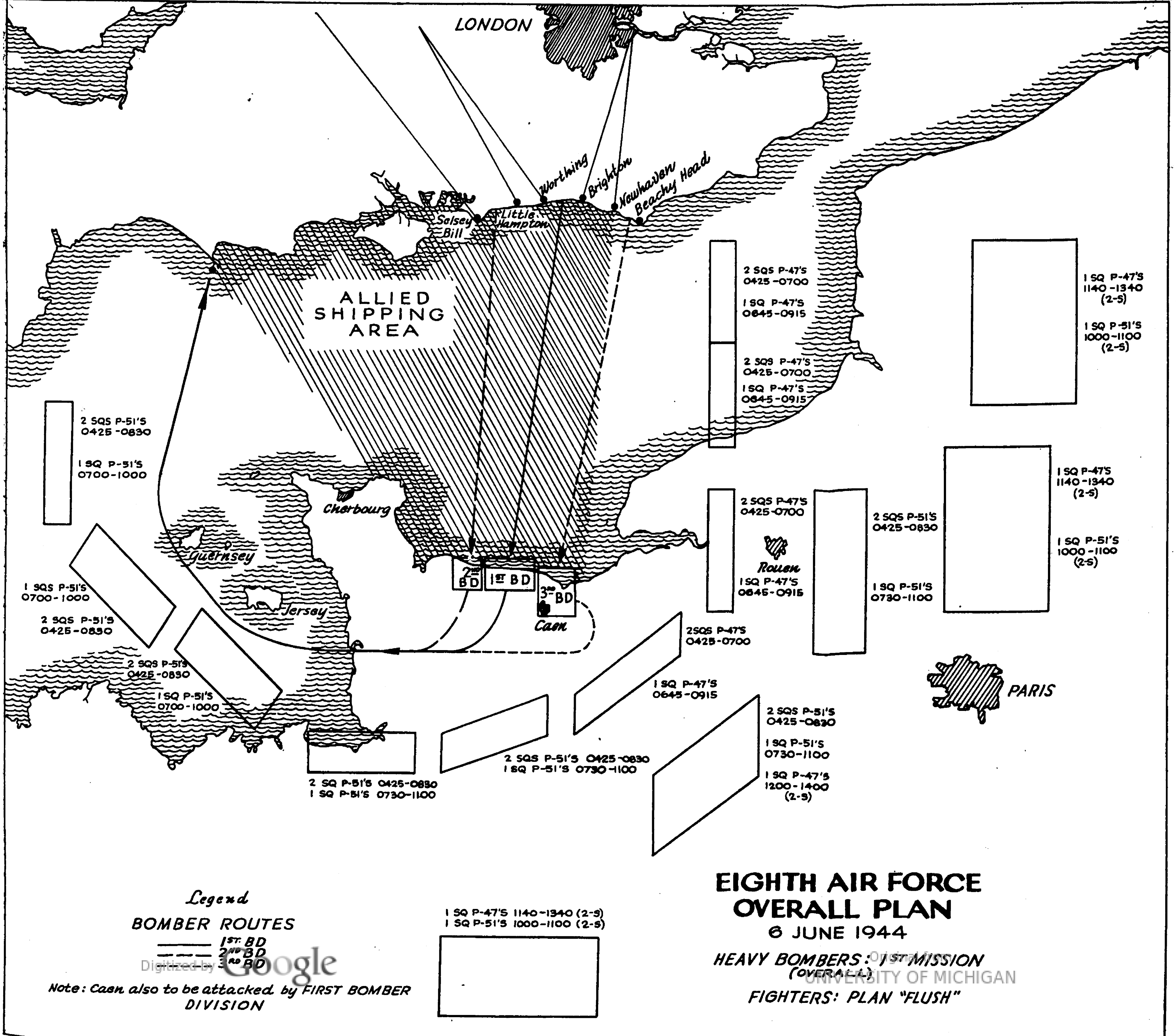
* * *

The plan for invasion envisaged air operations on a comprehensive and unprecedented scale. These were divided into two phases. The aim of the first was the attainment of Allied air supremacy and destruction of the enemy's productive capacity to the point where, once the projected foothold on the Continent had been secured, overwhelming matériel superiority could be brought to bear. The second phase had as its objective effective air cooperation with the ground assault.

A vital share in the preparatory operations was allotted to the strategic bomber forces of the Royal Air Force and the U. S. Eighth Air Force. In the second phase the Ninth Air Force and the Second Tactical Air Force (RAF) were in the forefront, but again the strategic forces made important contributions.

On 15 April 1944 the over-all air plan for the employment of all British-based aircraft in cooperation with the forthcoming invasion of France was formally issued by Headquarters, Allied Expeditionary Air Force, having been originally drafted some 6 weeks earlier. It contained detailed provisions for operations and furnished the basis for extensive preparations by the Eighth Air Force to fulfill its considerable proportion of the over-all assignments. A directive from Lt. Gen. Carl Spaatz's headquarters, USSTAF, dated 30 May 1944, confirmed earlier informal directions requiring the rendition by the Eighth Air Force of maximum cooperation according to provisions of the air plan and related documents.

Between 15 April and 6 June practically everybody had a hand in formulating the plan, which changed so often and so much its final form was only a distant relative of the original. The commanders of all the principal air, ground, and naval forces in the theater worked on it. Details were suggested, developed, polished by committees of staff representatives and technical experts. When formally published, it represented the knowledge and opinions of men who knew their



Note: Caen also to be attacked by FIRST BOMBER DIVISION

EIGHTH AIR FORCE OVERALL PLAN

6 JUNE 1944

HEAVY BOMBERS: 1ST MISSION (OVERALL)

FIGHTERS: PLAN "FLUSH"

Original from UNIVERSITY OF MICHIGAN

jobs. A brief chronology of the more important planning phases can be traced as follows:

1. The AEAF was created on 15 November 1943, with Air Chief Marshal Sir Trafford Leigh-Mallory designated as Air Commander in Chief. Headquarters, AEAF, was thereafter represented at the 21st Army Group meetings, and the basic requirements of air cooperation were established, subject to the general policies already formulated by the Combined Chiefs of Staff.

2. A Joint Planning Committee was formed on 15 December 1943 by Headquarters, 21st Army Group, to consider the relationship of air power to the assault plan, the delay of enemy reserves, coordination with naval fire, and neutralization of coastal artillery. When Headquarters, AEAF, became fully organized and staffed, an Operations Plans Section was constituted, which gradually took over the functions of the Joint Planning Committee.

3. Of more immediate significance to the Eighth Air Force was the formation on 10 January 1944 of the AEAF Bombing Committee to plan specifically the employment of bomber aircraft. Principal considerations were:

   a. Suitability of targets for bombing
   b. Relationship of bombing commitments to the scale of effort estimated to be available
   c. Allocation of priorities to the various commitments
   d. Apportionment of the available bomber effort

Supplementing the AEAF Bombing Committee almost from the start was the Operational Planning Committee, consisting of certain members of the first-named body plus representatives of the 21st Army Group and each of the air forces involved. The work of the two committees was so closely interrelated that no separate assessment of their contributions toward the final detailed plans is possible. The function of both was to transform into concise and exact operational programs the general policies agreed upon by the air, ground, and naval commanders. Designated to represent the Eighth Air Force on the Operational Planning Committee was a senior operations controller, but as the earlier meetings concerned primarily the commitments of the tactical air forces, his attendance was required only occasionally until 15 April 1944. Before and during this period, specific problems pertaining to heavy-bomber operations were often submitted by letter to USSTAF or Eighth Air Force for solution.

By 25 May, details of the Eighth Air Force program were largely completed. On 29 May, Air Chief Marshal Leigh-Mallory requested each headquarters concerned to appoint a regular member of the committee, prepared to meet daily. Thereafter until 30 June, the Eighth Air Force representative was in constant attendance day and night.

To facilitate complete understanding between the Eighth Air Force and the principal Army headquarters, SHAEF granted permission for direct contact between USSTAF and Eighth Air Force representatives, on the one hand, and American and British Army staff officers, on the other. Two such meetings were arranged, at which very important concrete agreements were reached. The first involved the commander and staff of the American First Army Artillery, and the second was with staff officers of the I and XXX Army Corps of the British Second Army. Final coordination of air activities was achieved through informal meetings among representatives of the various commands.

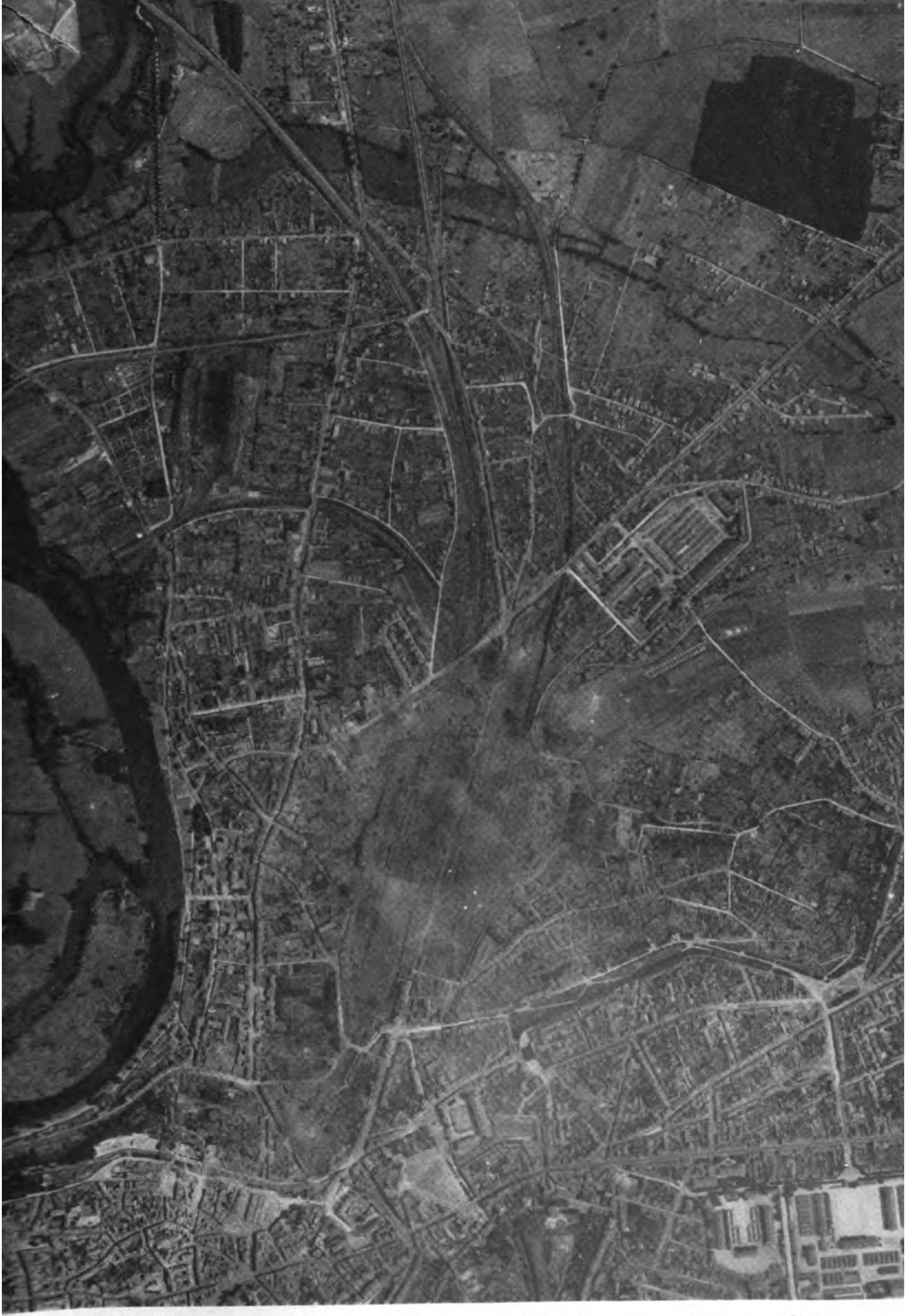
Daily meetings of air force commanders were begun on D minus 3 and continued throughout the critical period of the invasion. Final alterations in plans were considered and decided upon, as well as the transitory problems arising as the invasion forces moved inland after the initial foothold had been secured.

Eighth Air Force Aims and Commitments

Heavy Bombers

Before considering the tactical program involved, it is well to summarize briefly the strategic role previously enacted by the Eighth Air Force, together with RAF Bomber Command. This role, designed to provide indirectly for the ultimate success of the invasion, was incorporated in the Combined Bomber Offensive Program, its aim having been defined as "the progressive destruction and dislocation of the German military, industrial, and economic system and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened."

Pertaining more directly to the success of the invasion was the corollary development of a specific bombing program against the German aircraft industry. This program was directed at the attainment of virtual air supremacy and as such was indispensable to operations by ground forces. It was not until the summer of 1943 that



TACTICAL TARGET. A good concentration of bombs on the Angoulême marshalling yard, scored by Eighth Air Force heavy bombers.

the Eighth Air Force could operate in sufficient strength to execute sustained large-scale attacks, but its efforts in those summer months were sufficient to keep the GAF from creating enough front-line strength to stop subsequent major operations. Adverse weather during November and December prevented the cumulative bombing necessary for complete success in such an undertaking, but production levels had been affected to the extent that the Luftwaffe had done little more than maintain its strength during 1943.

A more intensive campaign was possible during the early months of 1944, reaching a peak of sustained effort during the period 20–25 February and maintained, subject to tactical considerations, until the end of May. The substantial damage to factories and assembly plants, coupled with destruction in aerial battle of German first-line combat aircraft by both bombers and escorting fighters on a hitherto unprecedented scale, was unquestionably the decisive factor in reducing the GAF to the point where it had no more than a nuisance value during the critical invasion period. This was attested by the remarkably low number of sorties directed against the Allied beachheads and shipping lanes.

The following figures give some appreciation of the war of attrition by the Eighth Air Force against the GAF. During the first 6 months of 1944, 6,813 bombers dropped 16,522 tons on aircraft factories, and 8,257 bombers dropped 21,267.7 tons on airfields and air parks. In the same period 1,914 first-line enemy aircraft were destroyed by the bombers in aerial combat and 1,682 were destroyed or damaged on the ground as a result of bombing of air parks, airfields, and factories. To these figures can be added the impressive total accounted for by escorting fighters—1,696 destroyed in combat and 761 in strafing attacks. Results obtained against other strategic targets were not so strikingly apparent in relation to D-day operations, but evident shortages in fuel, tanks, motor vehicles, radar equipment, and ammunition were traceable, at least in part, to the strategic bombing of the Eighth Air Force and the RAF Bomber Command.

During April and May 1944 continuation of attacks against strategic objectives was necessary to prevent reconstruction and as a means of holding the greater part of the GAF within Germany. At the same time the first commitments directly associated with the impending assault came into force. (There were also attacks against installations near the French coast when the weight of Eighth Air Force bombing was required in addition to the continual operations by tactical air forces.) These initial commitments consisted of attacks against 20 marshalling yards in occupied territory and neutralization of all active GAF operational bases within a 350-mile range of the invasion beaches.

To avoid giving any clue as to the probable assault area, attacks on both target categories were widespread, the marshalling yards being key points throughout the rail network of western Germany, Belgium, and northern and eastern France, and the airfield targets including the more important bases in northern Germany. The purpose of the Transportation Plan was primarily the destruction of repair and maintenance facilities and only incidentally the tearing up of trackage and damage to locomotives and rolling stock. By these means it was hoped to prevent the enemy from effecting rapid concentration of men and matériel, cut the flow of supplies and reinforcements from Germany, and force increasing reliance upon road transport, thus promoting wastage of fuel and motor vehicles and offering targets most suitable for fighters and fighter-bombers. Pursuant to this plan, 3,469 bombers dropped 9,520 tons on marshalling yards in Germany, France, and the Low Countries during the month of May. These attacks were so successful that the Eighth Air Force was able to bomb additional targets not assigned in the original list.

The Airfield Plan was designed to deprive the Luftwaffe of bases within effective striking range of the assault beaches by destruction of permanent installations for repair, maintenance, and servicing, and by cratering runways and landing grounds to an extent that fields would be unusable. Parked aircraft destroyed in these attacks would constitute a further blow against the enemy's dwindling front-line strength. It did not prove feasible to conduct operations against all such targets, but the most important were hit and a good percentage was effectively neutralized. From D minus 30 and D minus 21, respectively, the scope of the attacks against rail and airfield targets was considerably narrowed, but special care was taken in the selection of targets so as not to reveal the actual invasion area. Airfields attacked were confined to those within a 130-mile radius of Caen and in the Brest-Nantes region, to compel German fighters to operate from bases at least as far distant from the beachhead as those of the Allied tactical forces.

In addition, it was agreed with the Naval Chief of Staff that the Eighth Air Force would undertake to attack bases for submarines and light naval vessels if diversion of effort from other commitments was feasible. Only one such attack was undertaken, and adverse weather prevented its successful completion.

Throughout this preliminary period, wherein the original commitment against strategic objectives was modified by the Transportation and Airfield plans as well as by the occasional attacks required against coastal installations, the Eighth Air Force, nominally under the control of SHAEF from 14 April 1944, was allowed to retain freedom of decision in fulfilling its varied assignments. This greatly facilitated operations, as priorities could be carefully balanced against weather factors and other operational considerations by those best qualified to cope with the problems of heavy-bomber operations. Not until 1 June 1944 did control under the fixed schedule provided for in the over-all air plan for the invasion pass to Headquarters, AEAF.

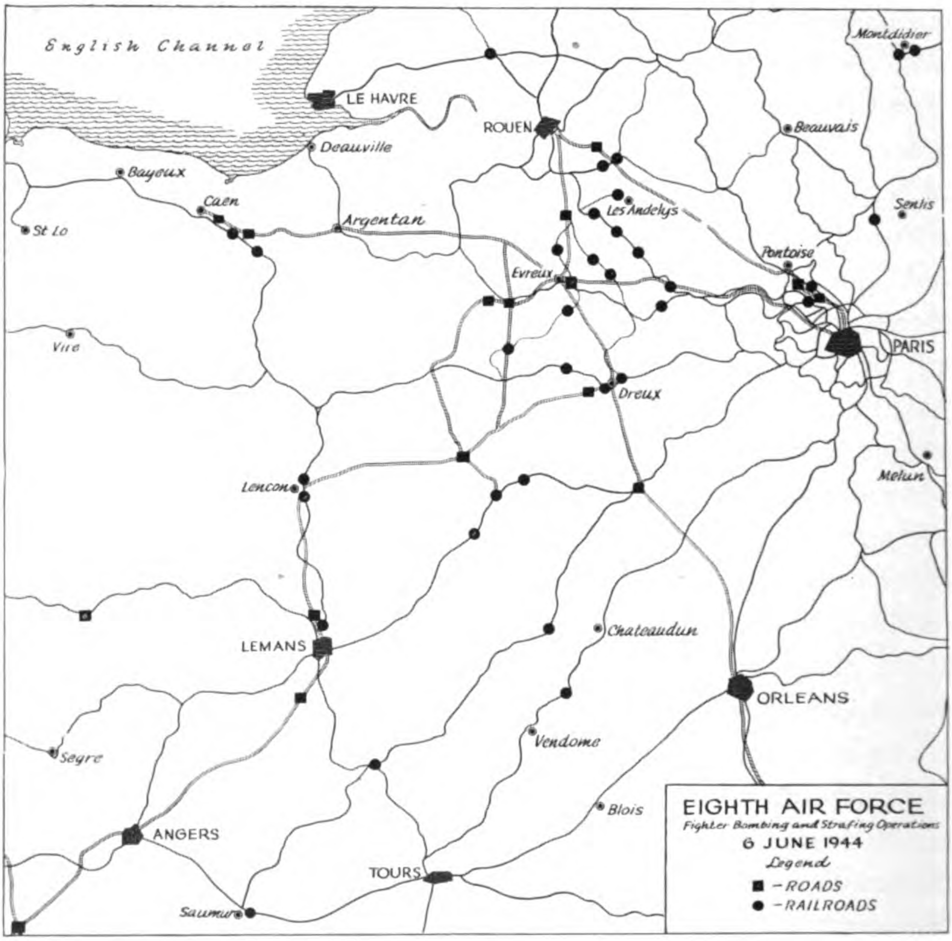
Immediately prior to D-day (D minus 3 through D minus 1) Eighth Air Force operations were to be twofold in nature, consisting of final attacks against rail junctions and airfields as well as missions against coastal installations. The postponement of D-day brought into effect a previously prepared schedule of targets in the same categories. Their size and the identification problems which they presented made the probability of direct hits very small, and, even if hit, the concrete emplacements were of such thickness that little harm was likely to result. During this short period prior to D-day, bomber forces were to be carefully husbanded to nsure that the necessary strength for the comprehensive D-day program was maintained. Therefore, the operations for each day were to employ only 50 percent of the available strength with one important exception: if visual conditions prevailed over Germany on either D minus 3 or D minus 2, 100 percent of the effort was to be expended, 40 percent against the usual tactical targets and 60 percent against strategic objectives within Germany. The latter mission was designed as a final attempt to contain enemy fighter strength for defense of Germany until the last moment before the actual landings.

The most important and by far the most elaborate D-day plans concerned the first mission of the day, involving attacks immediately prior to H-hour against 45 coastal installations between the Orne and the Vire estuaries on the Normandy coast of France. The 6 mile coastal strip included all assault beaches except an adjacent American beach, designated as Utah, which was the responsibility of the U. S. Ninth Air Force.

Some 1,200 heavy bombers were to participate, flying in squadrons of six aircraft. Following a carefully devised system of predawn assembly aided by searchlights, navigation lights, Aldis lamps, buncher and splasher beacons, and Gee equipment, the aircraft were to fly predesignated courses to the target area, bombing in successive waves until H-hour (or thereafter attacking secondary targets well inland). Assault craft were to remain 1,000 yards offshore until H-hour, and a 5-minute interval was to elapse between the releases by the last wave of bombers and the initial touchdown by the assault troops. These safety factors represented the final compromise between the desire of the ground forces to exploit immediately the demoralization resulting from the bombing at the risk of casualties and the inclination of the air forces to impose considerably greater intervals to minimize the dangers from possible bombing errors.

Demoralization of enemy front-line defenders and disruption of communication lines for reserve forces were the sole aims of the pre-assault bombing. It was understood that only a small percentage of the actual targets would suffer direct hits and smaller still would be the number seriously affected. Bomb loadings were established of 100-lb. GP, 120-lb. fragmentation, 500-lb. GP, and 1,000-lb. GP, the last for installations well clear of the beaches. Fuzing was to be instantaneous to avoid cratering the beaches except for targets away from the landing areas, where 1/10 nose-1/100 tail was permissible.

Alternative plans were provided for bombing through overcast, since it had been agreed that, other factors being favorable, the ground assault would be initiated whether or not visual bombing was possible and, if necessary, entirely without bomber cooperation, in which event the Eighth Air Force was to be in constant readiness. Minimum requirements for visual attacks by heavy bombers were an 8,000-foot ceiling, 3-mile visibility, and sufficient breaks in any low cloud to permit ready target identification. Less favorable conditions would demand the substitution of the plan involving overcast technique. Pinpointing of targets would be impossible, but since demoralization and immobilization of enemy forces were the principal aim, it was considered that area bombing of the sectors wherein lay the specific visual targets would provide virtually the same effect.



Squadrons were to fly six abreast and bomb on the release of a Pathfinder aircraft in one of the center squadrons. By such an arrangement deflection errors were largely neutralized, but further safeguards against errors in range were deemed necessary. Accordingly, the interval between the final bombing and the initial touchdown was to be increased to 10 minutes. One other necessary change was the instantaneous fuzing of all bombs, since the entire attack was to be directed against the assault beaches, which must not be cratered. Since the Ninth Air Force aircraft were not equipped for overcast bombing, provision was needed to cover Utah beach in their stead, should it prove impossible for even the medium bombers to operate beneath the cloud base.

Subsequent to the assault phase, additional missions were laid on in cooperation with the landing operations. Targets outlined in the over-all air plan consisted mainly of transportation choke-points, including several Normandy towns through which ran important lines of communication. Leaflet warnings were to be dropped to the populace of these towns before bombing.

Weather, photographic, and visual reconnaissance missions, special supply operations to the French Forces of the Interior, leaflet-dropping sorties, and radio countermeasure flights were to be undertaken in conjunction with the over-all ground and air activities.

No exact schedule of operations subsequent to D-day could be prepared in advance, since the progress of the ground forces and the nature of the enemy's reaction would be the determinants, but certain general features of the program were decided upon. Detailed target material, covering virtually all known potential tactical objectives in northern France, received the required distribution well in advance of D-day. Attacks were to be continued against road and rail transport facilities, including bridges on the Brest peninsula and across the Loire River; enemy airfields; concentrations of enemy reinforcements and supplies; and coastal defenses in the Pas de Calais sector. Blasting of robot-bomb launching sites was also contemplated if the security of the British Isles called for such action.

Requests for specific attacks were to be forwarded from Headquarters, AEAF, when the Eighth Air Force representative was in regular attendance. It was anticipated that a number of these missions would have to be undertaken on very short notice. The interval prior to a return to strategic bombing was dependent upon the degree of success attained by the ground forces, and it was recognized that even after the need of continual cooperation by heavy bombers had passed there would be periodic demands for tactical operations.

Fighters

No marked deviation from the normal escort tasks of Eighth Air Force fighters was required until D-day. Early in 1944, following substantial increases in fighter strength, the policy had been inaugurated of executing strafing attacks upon completion of escort duties. Such attacks became an accepted adjunct to high-altitude escort and, due to the tremendous scale of activity, provided the best possible training for ground-cooperation missions. On days when no heavy-bomber operations were scheduled, it was often possible to dispatch the fighters on independent bombing and strafing missions, some in the nature of experimental attacks against airfields and bridges. To a large degree, experience gleaned from these missions equipped fighter pilots for the job ahead.

The first fighter commitment to become effective on D-day was the protection of Allied shipping during daylight hours. P-38's were detailed to this task because of their readily identifiable lines and also because this fighter, relatively less effective than the P-47 and the P-51 at high altitudes, can operate without handicap at 3,000/5,000 feet, the altitude designated for these patrols. The four P-38 groups operating under the direction of the Combined Control Center at Uxbridge and in conjunction with Ninth Air Force P-38 groups were to work under the Type 16 ground control station at Ventnor; thereafter, Fighter Direction Tender No. 13 would be stationed in mid-Channel and would assume control. Each of four sectors was to be covered by one P-38 squadron, flying in 90-minute patrols according to a predetermined schedule.

On D-day the other Eighth Air Force fighters, four P-47 and seven P-51 groups, were to support all American and British bombers operating during daylight hours in the vicinity of the assault area by means of continuous area patrols east, south, and west of the beachhead, patrols which would also serve to form a protective screen around the ground forces. The cover area was bounded approximately by the Seine on the east and the Loire on the south and, to avoid identification difficulties, excluded the actual assault locality where Ninth Air Force and Second Tactical Air Force fighters would be operating.

These operations were to be conducted in accordance with three well-formulated plans, two for the two peak periods of bomber effort, dawn and late afternoon, and one for the intervening period of less activity. To avoid continuous patrols the fighter groups were divided into two units, an "A" group of two squadrons to fly during the peak hours and a "B" group of one squadron for the in-between period.

An important secondary function, subordinate to bomber support, was the execution of strafing and bombing attacks at the end of area patrols or on independently scheduled missions when the bombers were not operating. It was expected that more emphasis would be given to this type of operation subsequent to D-day. The principal aim of such activities was the destruction of enemy road and rail transport and the interdiction of all types of enemy movement toward the assault area. Target priorities were established as follows:

1. Enemy rail transportation
2. Enemy road transportation
3. Ammunition dumps
4. Troop concentrations
5. Airfields

Although direct control of the P–38's was to pass to the tactical fighter forces' Combined Control Center, the operational and executive control of the Eighth Air Force groups was to remain the responsibility of Eighth Air Force and VIII Fighter Command, which also had the task of preparing the detailed plans for implementing the over-all assignments.

Transition From a Strategic to a Tactical Role

Heavy-bomber operations in close cooperation with ground forces involved a tactical concept differing greatly from familiar strategic bombing activities. Problems were posed in relation to assemblies, formations, routings, bomb loadings, fuzings, and overcast bombing techniques; details of briefing and mission reporting had to be worked out; coordination with other air forces and with naval planners was necessary to a far greater degree than heretofore required; aircraft recognition and delineation of prohibited bombing zones had to be considered. Most important, the requirements of the ground forces must be translated into a workable air cooperation program, and the ground force commanders had to be thoroughly informed as to the capabilities and the limitations of the heavy bombers. Differences arose and were generally compromised, although a few were submitted to SHAEF for final settlement. The over-all plan was of such paramount importance that practice exercises were necessary to settle many points, often on a large scale and sometimes integrated with the execution of operational flights. Rehearsals of certain features of the program were undertaken to assure successful performance at the critical time. The more important problems, and the steps taken to solve them, were:

Predawn assembly

The initial D-day bomber program called for take-off and assembly during hours of darkness on an unprecedented scale. It was believed that the use of radio aids, flares, and navigation lights would permit

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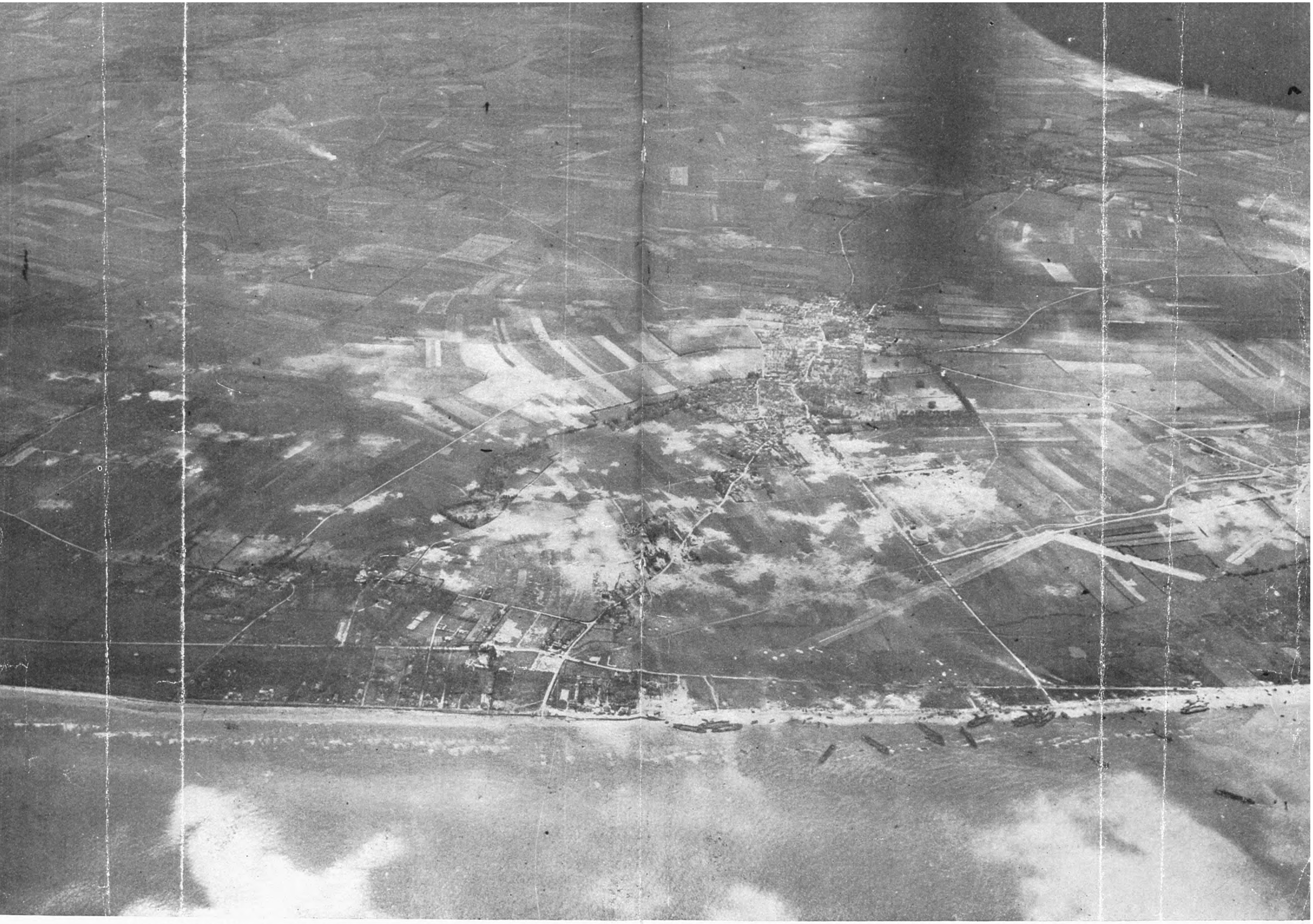

BEACH SCENE. In this oblique view of one of the Normandy invasion beaches it is possible to see the blast damage resultant from the bomb carpet spread before the assaulting ground forces.

successful accomplishment, but it was deemed wise to have a trial operation. This was conducted on 1 May before a regular bombing mission. It involved nine groups of 21 aircraft each from each of the three bombardment divisions, with aircraft assembling in specified areas during the hours of darkness and following designated routes to the south coast and back to the base areas. The aircraft in each group were dispatched in three waves, the first composed of nine-plane squadrons and the second and third of six-plane squadrons. The exercise was completely satisfactory, and on the basis of this test the six-plane squadron was adopted for the D-day missions.

Routings

While the usual consideration of route planning prevailed, the necessity of assuring recognition of aircraft by naval vessels employed on convoy operations resulted in placing restrictions on flights over the shipping lanes. One of these forbade any aircraft except fighters on shipping patrol to fly over the convoy areas from the direction of the combat zones or the Pas de Calais. Because of this, and in connection with the use of Pathfinder equipment, it was decided to prescribe a course for the initial D-day mission directly from the south coast of England to the Normandy beaches and returning south and west of the Channel Isles.

Loadings and fuzings

Extensive research was conducted to determine the types of bombs and fuzings to be used. An AEAF Weapons Committee, with four representatives of the Eighth Air Force, was established to consider these questions, and several practice bombing missions were conducted, the most comprehensive being held on 26 April, in which 12 nine-plane flights were sent to the Studland Bay bombing range to determine the effect of 100-, 250-, and 500-lb. bombs with various fuzings. It was learned that fragmentation and 100-lb. HE bombs would be most effective against personnel, vehicles, wire entanglements, and gun positions not emplaced. Recommendations based on these findings were incorporated in the over-all air plan.

Overcast bombing technique

The possibility of having to use Pathfinder instruments for initial D-day bombing missions was considered, and the relative merits of both H2X and GH were weighed. On the basis of operational expe-

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rience and tests the former was selected. This decision resulted from the lower average range error to be expected from H2X as compared with GH when the former was operating against targets located in such a manner that water and land appeared simultaneously on the scope at right angles to the line of approach, the definition in such instances being particularly clear. This factor was an important consideration in the selection of the north-south approach. Deflection errors did not constitute hazards on this axis of attack. The limited number of GH aircraft available was a further consideration, since accuracy would be seriously impaired if a very large number of units was releasing on relatively few Pathfinders, and the possibility of equipment failures on these few Pathfinders would have a proportionately large effect on results.

Visibility trials

Accurate determination of earliest and latest times practicable for visual bombing was of vital import to the exact establishment of H-hour. A visibility trial was conducted by aircraft of the Eighth Air Force, the Ninth Air Force, and the 2d Tactical Air Force, operating against simulated targets in England (an infantry platoon, field artillery battery, coastal battery, small village, roads in open and wooded areas, railway lines, and coastal and inland towns). Results of this operation were forwarded to Headquarters, AEAF, on 24 May 1944 for use in the determination of H-hour.

Briefing and interrogation

The security aspect was a primary consideration of the briefing, and it was decided that efficiency would not be impaired if air crews were not given the essential information prior to the normal pre-mission briefing. Exception was made in the case of Pathfinder navigators and bombardiers, who were specially briefed some days in advance. At the briefing, stress was laid on the importance of avoiding premature bomb releases because of the tremendous Allied assemblage offshore. Normal time limits for interrogation and submitting mission reports were revised in the interest of expediting the flow of information regarding results and observations. A system of tactical reporting was accordingly set up whereby preliminary reports were to reach Eighth Air Force Headquarters within 45 minutes after first landings and detailed intelligence reports within 2 hours. A comprehensive staff coordination trial was held involving the issuance of specimen field orders, briefing for three simulated D-day missions, fictitious take-off and landing times, and flash and intelligence reports.

Aircraft recognition and demarcation of friendly lines

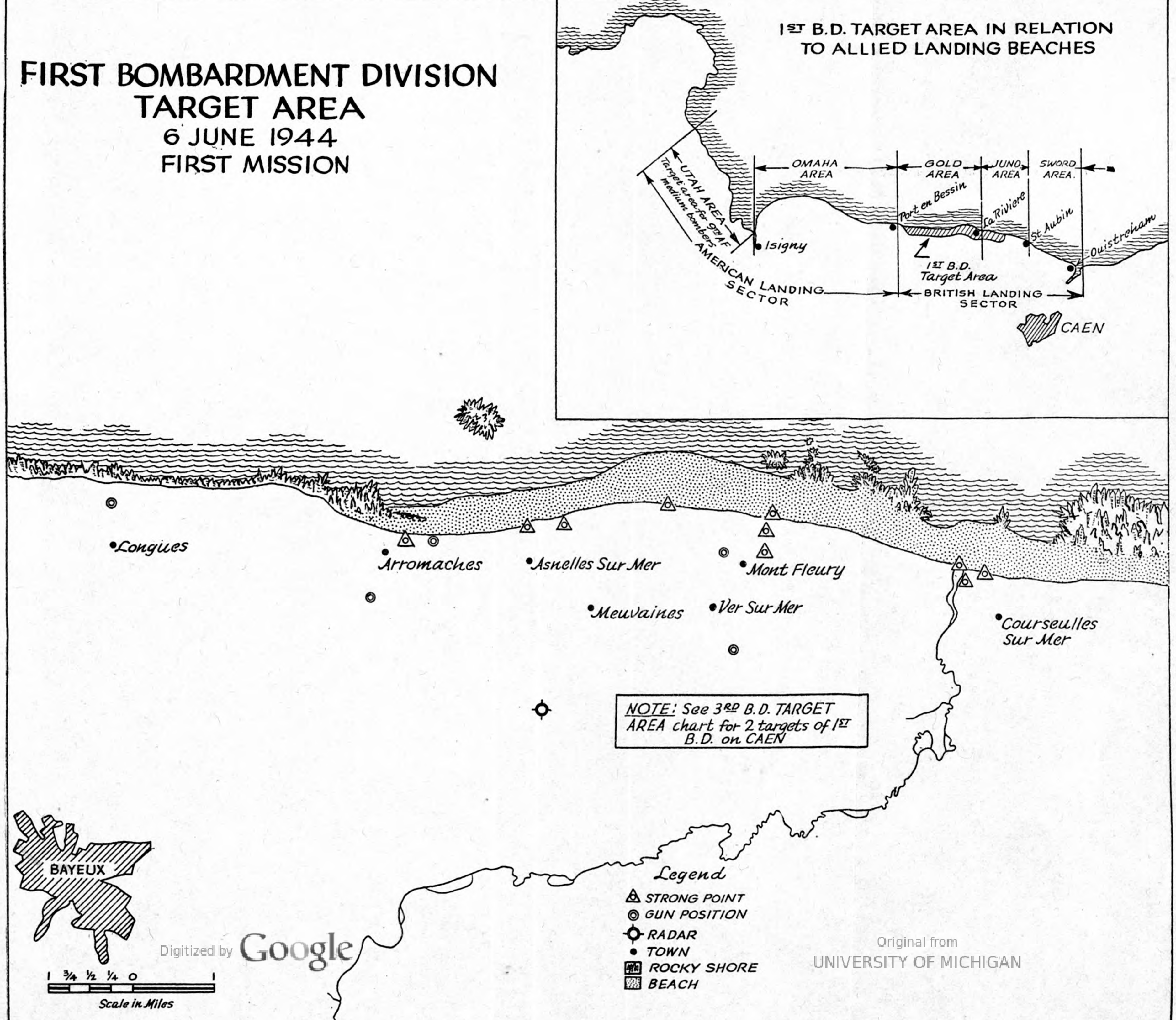
The dangers inherent in the inability of Allied units—air, sea, and ground—to ascertain without delay the hostile or friendly character of combat aircraft were recognized and precautionary steps were taken. Prohibited zones for certain types of aircraft were established, principally over the shipping lanes and assault area, thus allowing naval and ground forces unrestricted freedom to fire at aircraft other than stated types or approaching from other than certain directions.

Another measure was the institution of distinctive markings for aircraft. Except the four-engine bombers, all planes were painted with wide alternate black and white stripes on wings and fuselage. The converse problem of defining areas for combat aircraft in order to avoid bombing and strafing within friendly lines was largely overcome by the adoption of a bomb line. Beyond this line (one predetermined for the 6 hours immediately after H-hour, another for the remainder of D-day, and thereafter subject to daily changes as decided by air and ground staffs) ground forces ventured at their peril and targets could be attacked at will. Behind this line no bombing or strafing was to be conducted without specific arrangement with the ground forces, and the originator of such a request was to assume the responsibility for clearing the region around the targets chosen for attack.

Ground force requirements

Certain adjustments in the bombing desired by Army planners were necessary to conform to bomber capabilities. When requests for destruction of fixed defenses, explosion of mine fields, cutting of underground cables, elimination of barbed-wire entanglements or antitank obstacles, demoralization of front-line troops, delay and disruption of reserve elements, and the blocking of transport by bombing French towns—when such requests were submitted by Army commanders it was necessary to point out the probable degree of success against each type of objective and then to secure priority ratings so that the bomber strength could be apportioned as desired by the ground forces.

In many instances the destructive effect necessary could be obtained only by use of heavy bombs with delayed fuzings, which would cause



FIRST BOMBARDMENT DIVISION TARGET AREA

6 JUNE 1944

FIRST MISSION

NOTE: See 3RD B.D. TARGET AREA chart for 2 targets of 1ST B.D. on CAEN

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the cratering the Army wished to avoid. The probability was emphasized that direct hits on gun emplacements would not be in excess of 2 percent of the tonnage dropped and that in most instances little damage would result. Nevertheless, the Army requested that the attempt be made to destroy those on the flanks of the beaches, believing that some emplaced positions could be put out of action, at least temporarily, and that craters in this area would afford valuable protection to assault troops sent to capture these strong points. Otherwise it was agreed that the air cooperation should aim primarily at the demoralization of front-line troops, with a possible bonus in the destruction of barbed wire and other hazards. No request was made for the elimination of underwater mines or obstacles. The Army commanders were informed of the possibility of gross errors causing casualties among troops in assault craft and accepted them as a necessary risk.

Selection of targets

Certain categories of requested targets were not deemed by Eighth Air Force to be satisfactory for heavy-bomber attack. In three instances the matter was submitted to SHAEF for determination. The first concerned marshalling yards in occupied territory, and objection was based on the belief that medium bombers would be adequate, that the damage could be readily repaired and hence would not justify the effort expended, and that the proximity to built-up areas would result in civilian casualties and property damage outweighing the disruption of enemy communications. The second case involved the bombing of bridges. It was considered that the nature of these targets would require a very great expenditure of effort in relation to probable damage achieved and the erection of temporary spans could largely nullify successes gained. In the third instance the matter concerned choke-points in French towns which the 21st Army Group desired to have blocked by rubble in order to delay enemy reinforcements. The stand of the Eighth Air Force was based on the risks to civilian lives and property. In all three cases SHAEF, motivated by military expediency, directed that the attacks be made. Arrangements were made to drop warning leaflets sufficiently in advance of the last-mentioned type of attack to enable the civilians to evacuate the threatened areas.

Over-all Air Cooperation Plan

In order to envisage the scope of the Eighth Air Force role in the projected over-all air effort, the commitments, as previously enumerated, may be compared with the following aims of the entire aerial program:

1. To attain and maintain an air situation whereby the German Air Force is rendered incapable of effective interference with Allied operation
2. To provide continuous reconnaissance of the enemy's dispositions and movements
3. To disrupt enemy communications and channels of supply by air attack
4. To support the landing and subsequent advance of the Allied Armies
5. To deliver offensive strikes against enemy naval forces
6. To provide air lift for airborne forces

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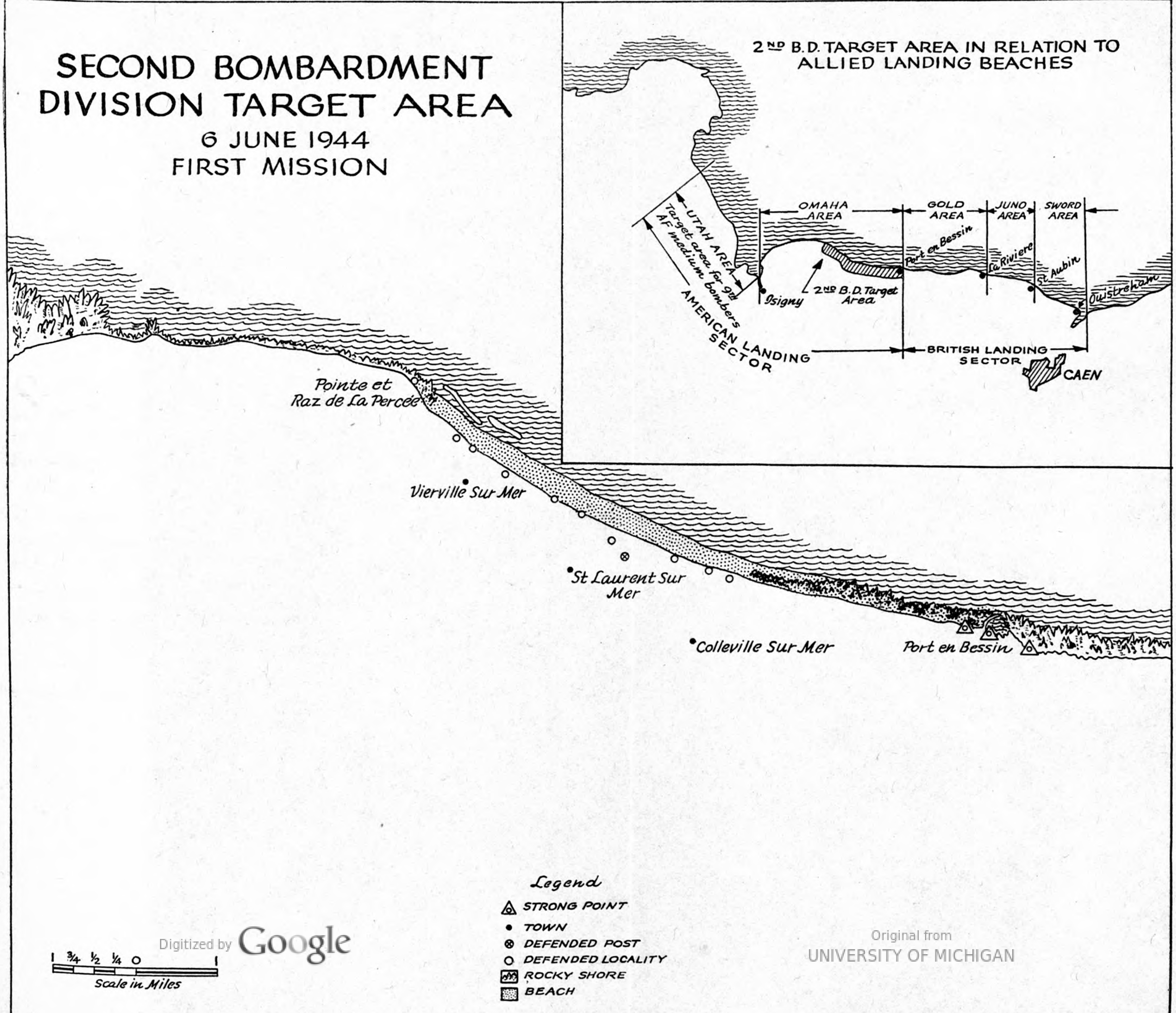


SECOND BOMBARDMENT DIVISION TARGET AREA
6 JUNE 1944
FIRST MISSION

Delivering The Punch

SUCH careful planning as has been related in some detail in this narrative merited gratifying results. In the following section the operations of the Eighth Air Force from 2 June through 17 June are examined.

D-day was the day for which so many thousands of ground-force troops had been eagerly waiting. This was their day to take over, which they did in magnificent fashion, adding new luster to proud regimental and divisional names. How the Eighth Air Force teamed with them is shown in the succeeding pages.

Operations 2–17 June 1944

THIS discussion is divided into two sections, one dealing with bombers and the other with fighters. The bomber assignment, separated into three time periods, was carried out as follows:

D minus 4 to D minus 1 (*2–5 June*)

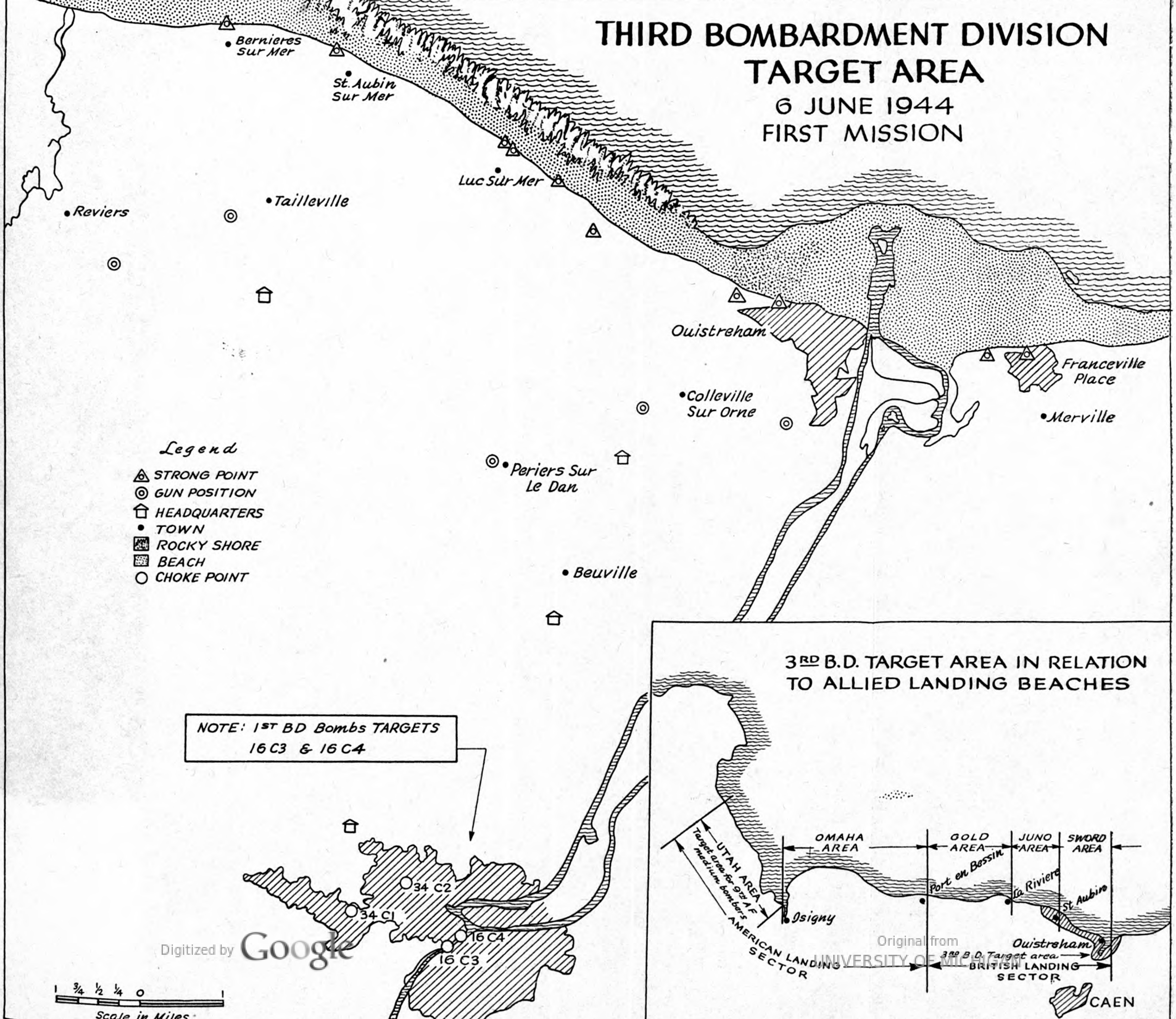
Within this period the job of the Eighth Air Force was to continue attacks against transportation and airfield targets in northern France, and to institute a series of blows against coastal defenses, a majority situated along the Pas de Calais coast. A final effort to contain German fighters within the Reich as late as possible by conducting a deep penetration against strategic targets had been planned for this period, but adverse weather interfered.

This phase of the program was performed according to plan. A total of 3,386 bombers participated in the eight missions flown and 9,387.45 tons were dropped for the loss of 14 bombers.

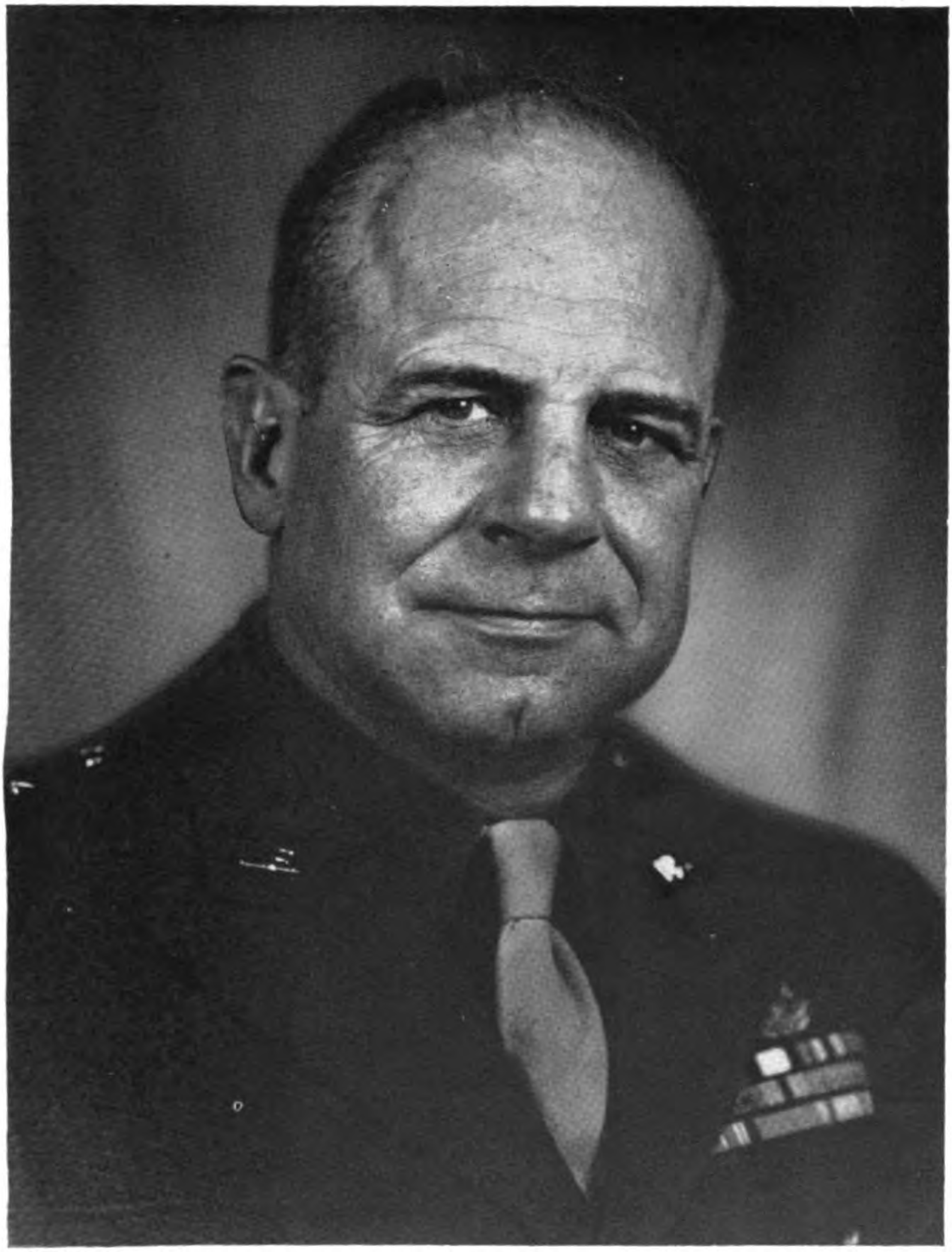
Substantial damage was inflicted upon airfield and rail transport targets. Few of the coastal defenses were seriously affected in proportion to the effort put forth, but this had been anticipated, the more so since Pathfinder technique was necessary in most instances. Since deception as to the actual landing area was the primary purpose of the attacks against this latter type of target, the operations may be regarded as successful, for, as far as can be ascertained, the landings along the Normandy coast had the advantage of complete tactical surprise.

D-day (*6 June*)

The first mission was concerned primarily with neutralization of coastal defenses and demoralization of German front-line troops immediately prior to the landings. The other three missions were



THIRD BOMBARDMENT DIVISION
TARGET AREA
6 JUNE 1944
FIRST MISSION



OFFICIAL PHOTO USAAF

Lt. Gen. James H. Doolittle, Commanding General, Eighth Air Force directed at the severance of communication lines between the beachhead defenders and reserve elements, with targets consisting largely of road choke-points in Caen and several smaller Normandy towns.

The first, third, and fourth missions were accomplished substantially as planned, employing overcast technique exclusively in the first and third and for several targets in the final mission. The second mission was not generally prepared for bombing through the overcast, and clouds over the targets prevented attacks except in the case of one formation which bombed a secondary target on the indications of the only Pathfinder aircraft participating. A total of 2,698 bombers participated in the day's operations and 3,596 tons were dropped for the loss of three bombers.

Assessment of damage caused during this day's operations was rendered difficult by the fact that a majority of the targets attacked were cloud-obscured and strike photographs were therefore unrevealing. In many instances follow-up operations were executed before reconnaissance cover was obtained. The beachheads were subjected to fire from naval guns, rockets, and mortars, and were bombed by aircraft of other commands, with the result that a definitive evaluation of damage was not possible. Information from surveys conducted by air force representatives, interviews with ground personnel, and prisoner-of-war interrogations may be summarized in the following manner:

1. The immediate beach areas showed only limited evidence of bomb damage, as was to be expected in view of the extra precautionary measures taken to avoid short bombfalls when through-the-overcast bombing technique was used. These precautions included the arbitrary time delays on bomb releases. Areas behind the beachhead, ranging from 300/400 yards to 3 miles, revealed extensive evidence of concentrated bombing patterns.
2. The principal contribution made by this bombing effort was the demoralization of enemy troops and the disruption of signal and transport communications, which hindered the deployment of immediate reserves.

In regard to the limited number of targets where damage was assessable from strike or reconnaissance photographs, results varied with cloud conditions encountered.

The noteworthy feature of D-day cooperation by heavy bombers was the fact that the beaches were bombed by airplanes flying above a solid overcast of clouds. While a carpet of bombs placed in front of the advancing troops was deemed highly desirable, the danger to our own soldiers from bombs dropped without visibility of the ground demanded most careful consideration.

Had it been necessary to make the decision several months earlier, it is likely that such a project would have been abandoned. By the use of through-the-overcast technique, Eighth Air Force bombers had been known to miss targets by wide margins. However, in preparation for D-day, against the possibility that weather would prevent visual bombing, especially selected navigators and bombardiers had been diligently trained in H2X technique, and repeated tests had been conducted against shore-line targets. These tests showed that accuracy was possible, and that the greatest menace to the safety of friendly troops was the danger of inadvertent and premature bomb releases. This risk was carefully weighed by the ground commanders against the advantage of a bomb carpet to clear their assault path. Confronted with photographic evidence of the accuracy of bombing tests, they elected to take the risk. This decision was a resounding vote of confidence in H2X equipment and in Eighth Air Force crews.

Briefing was precise, pointed, and personal. All watches must be exactly synchronized; careful attention must be given to all mechanical details; the bombing must be far enough in front of the ground forces to minimize any chance of hitting them, yet near enough to give the bomb carpet its maximum effectiveness. "Here are your friends and brothers," the airmen were told. "You won't see them, but they're there, depending on you. Don't hit them, but get your bombs on that shore line!"

If the decision to bomb ahead of our troops through overcast was breath-taking in its boldness, the results were epochal. A short distance offshore lay the LST's and other craft carrying the invading force. Confident of cooperation from planes they could not see, the men of the assault wave started ashore at the precise instant established beforehand. Exactly on schedule the first wave of bombers came over, laying its bombs on the shore line and proceeding inland. The entire force of bombers had to clear the attack point within 5 minutes or run the risk of dropping bombs on friendly forces. Absolutely according to plan the heavy bombers performed their mission, laying their carpet of bombs before the attacking Allies. So effective was their bombing, and with such a minimum of damage to friendly forces was the operation carried out, that many lives were saved. Ground commanders were lavish with their praise. Another milestone of modern warfare had been passed.

D plus 1 to D plus 11 (*7–17 June*)

Attacks aimed at the interdiction of enemy road and rail transport, with special emphasis laid on bridges over the Loire and the rivers of Brest peninsula; the denial to the German Air Force of the use of airfields and landing grounds within effective range of the beachhead; and the destruction of supply sites in northern France—these were the principal tasks allotted to the Eighth Air Force during the 11 days immediately following D-day. Toward the end of this period, a resumption of strategic bombing was contemplated, but unfavorable operating conditions over Germany resulted in prolonging tactical operations, although two missions against oil refineries in Germany were possible, at Emmerich on 14 June and Misburg on 15 June.

Scheduled assignments were carried out by the great majority of units involved in the operations during this period, although through-the-overcast bombing technique was frequently necessary. Participating in the 13 missions executed were 9,801 bombers; bombs dropped totaled 20,365.6 tons; losses were 41 aircraft.

Considerable success was achieved toward restriction of enemy movements by attacks on road and rail junctions, marshalling yards, choke-points and bridges. Notable was the destruction or severe damage caused to at least 16 road and rail bridges across the Loire River and rivers on the Brest peninsula. Operational airfields and landing strips in northern France were also successfully bombed, and many were rendered completely unserviceable by the destruction of permanent installations and the postholing of runways and landing grounds. Due principally to the necessity for employment of overcast technique, little damage was accomplished in the operations against the supply sites.

Fighters

Air cooperation

The first consideration in planning daily fighter operations during the period 2 to 17 June was adequate escort of all heavy-bomber missions of the Eighth Air Force. (On D-day the escorted forces

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included various other Allied air units.) The interdiction commitment, bombing and strafing of tactical targets on the perimeter of the battle region, could be undertaken only after the requirements for cover of bombers had been fulfilled. In fact, the limited enemy air reaction for the period as a whole made it possible to detail squadrons from supporting groups to execute attacks against ground installations even before the completion of their primary task, thus supplementing the bombing and strafing operations of groups which had not been needed for support.

In the majority of instances the bomber targets were closely located and the penetration involved was so shallow that ample escort was provided by assigning groups to patrols in areas in which the objectives were located or through which the bombers passed en route to and from them. On a few occasions the location of objectives made it necessary to assign all available groups to close escort, and in other instances a combination of area-type patrol and close escort was employed.

Claims against enemy aircraft resulting from aerial combat were 148 destroyed, 6 probably destroyed, and 58 damaged. Thirty friendly fighters are known to have been lost in engagements with the enemy.

Interdiction

The VIII Fighter Command's work during the period 6 to 17 June, that of preventing or delaying enemy movements with bombing and strafing attacks on lines of communication, was highly effective. These operations were carried out in areas on the perimeter of the assault zone, fighter operations over the battle area proper being the responsibility of the Ninth Air Force and 2d TAF.

Because little enemy air opposition was expected on 6 and 7 June, it was possible for fighter-bombers to operate on these days in small units of one and two squadrons. This plan enabled the harassing attacks to be more continuously maintained and allowed the Command to operate over a wider area than would have been possible had full groups been employed. As the enemy increased his fighter strength in France, this plan had to be abandoned because small units would have been subject to possible heavy losses. In this connection, full groups were employed on fighter-bomber missions on and after 8 June with either one squadron in each group as top cover for two fighter-bomber squadrons or one group covering one or two other groups executing such attacks.

From 6 to 17 June, a total of 335 fighter-bomber attacks, in all instances by units of 8 aircraft or more, were made against tactical targets, 147 against railway marshalling yards, sidings, junctions, and tracks, 87 against bridges, 38 against mobile rail transportation, 26 against road transportation, and 37 against various other targets. During this period 1,339.3 tons of bombs were dropped.

The over-all results achieved by bombing and strafing operations are not reflected by a mere examination of claims for the period, which are by no means complete. In many instances there was not sufficient time between sorties for detailed interrogation, while in others the participating groups described results in general terms, i. e., excellent, good, etc., without submitting specific claims. The following claims against rail and road transportation are believed to represent the minimum results obtained against such targets:

Target	*Destroyed*	*Damaged*
Locomotives	118	70
Railroad cars	375	1,258
Trucks	607	533
Tanks	16	31
Armored vehicles	12	15
Staff cars	7	10
Other vehicles	80	36

These claims afford a graphic indication of the scale of the fighter effort toward isolation of the beachhead area, but a further and very significant contribution was made by the ever-present threat of attack against rail and road transport which seriously impeded enemy movements by day.

Shipping patrol

From 5 to 10 June the four P–38 groups of the Command were committed to the execution of shipping patrols under the direction of the Combined Control Center. On 11 June, three groups and, from 12 to 15 June, two groups were used for this purpose. During these 11 days a total of 2,887 sorties were flown. None of the fighters was lost, but five sustained Category "E" (salvage) damage. Throughout the entire period, no enemy aircraft was encountered over the shipping corridor by groups of the VIII Fighter Command.

During the period 2 to 17 June, 15,773 fighters of the VIII Fighter

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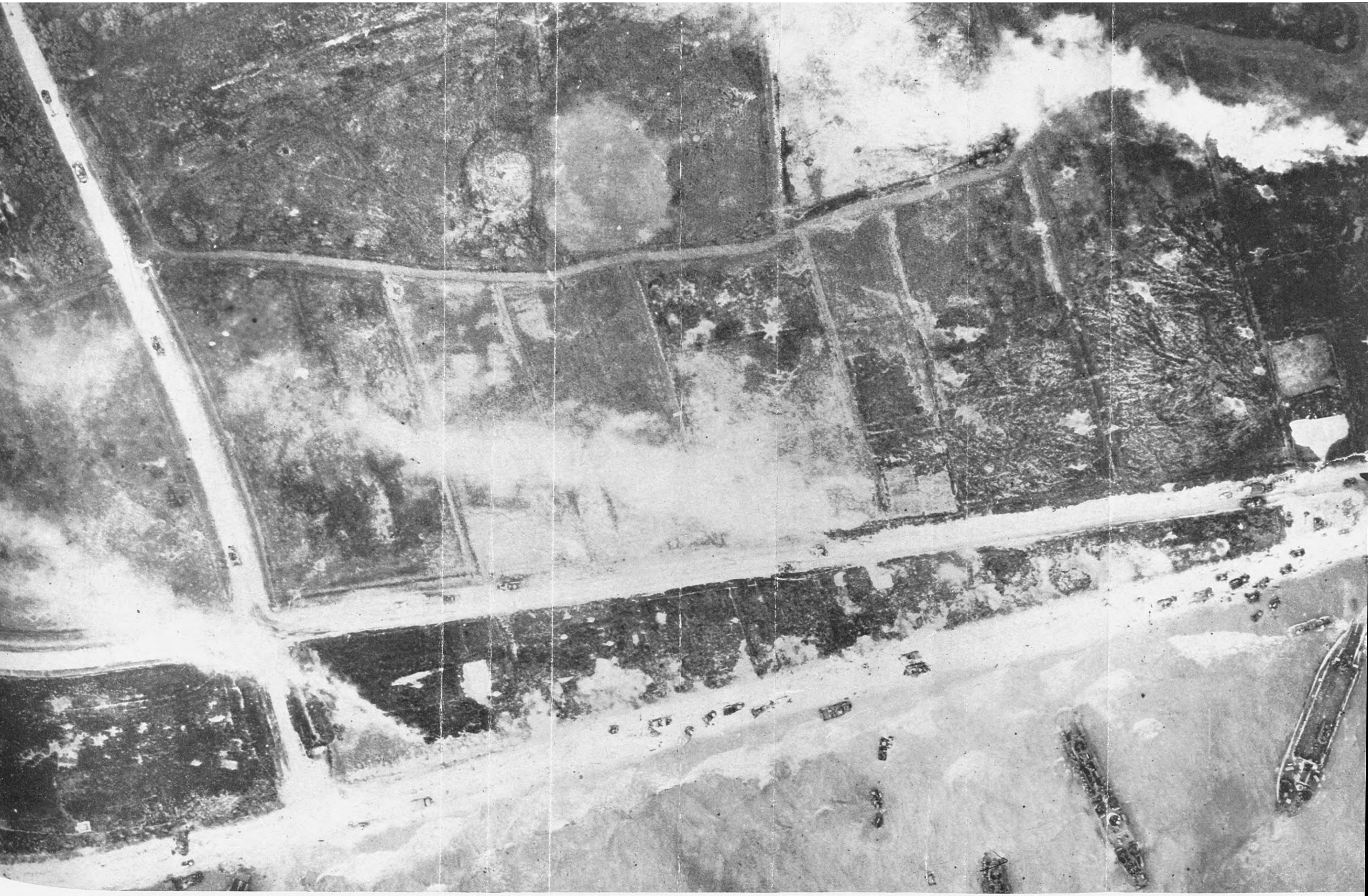


BEACH SCENE. This vertical view shows the beehive activity of the Normandy invasion in full swing. Note the pock marks left by the Eighth Air Force bomb carpet laid down by the heavy bombers. D-day bombing, through 10/10 cloud, was perfectly synchronized with the beach assault.

Command were dispatched on operational missions and 15,086 sorties were flown for the loss of 155 aircraft. Of these losses, 48 were attributed to antiaircraft fire, 30 to enemy aircraft, and 25 to accident. Causes of the losses in 52 instances are unknown. Total claims against enemy aircraft were 201 destroyed, 6 probably destroyed, and 82 damaged, of which number 148 destroyed, 6 probably destroyed, and 58 damaged resulted from aerial combat and 53 destroyed and 24 damaged from attacks on enemy airfields.

Subsidiary Operations

In addition to the major operational roles executed by Eighth Air Force bombers and fighters, other units performed important complementary functions. These consisted of weather and photographic reconnaissance missions, leaflet-dropping operations, radar-jamming flights, and special supply drops to the French Forces of the Interior. There were 501 sorties flown and seven losses in the course of these operations, which directly or indirectly contributed to the success of the over-all undertaking.

Enemy Air Reaction

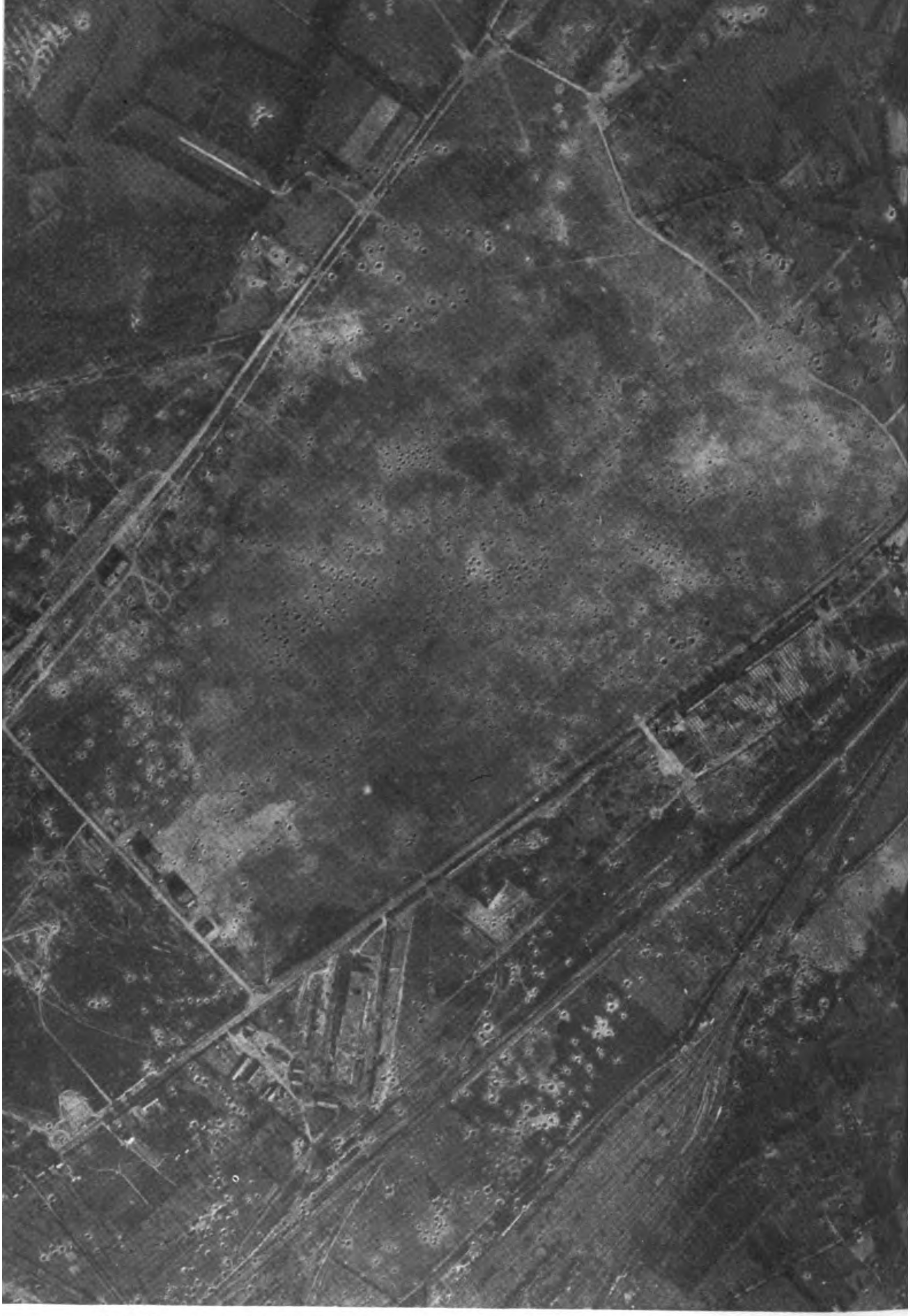
Calculations that enemy air opposition to the initial landings would not be on a heavy scale were borne out by the Luftwaffe's behavior. Our ground forces were both surprised and gratified at their relative freedom from air attacks.

It is of interest to examine just what the GAF was doing for several days before the invasion started, and then during the assault phase:

Dawn 28 May–Dawn 4 June

During the night of 28–29 May some 70 enemy aircraft, consisting of Ju–88's, Ju–188's, Me–410's, and FW–190's, operated against Britain. There was an armed reconnaissance of the Sussex coast by 10 FW–190's and Me–410's, and 50 Ju–88's and Ju–188's carried out minelaying operations between Teignmouth and Start Point. There were 10 Me–410's on intruder patrols over East Anglia. Bombs fell on Worthing, Hove, Lyme Regis, Torquay, and Paignton areas.

An armed reconnaissance of the eastern Channel was carried out by some 90 Ju–88's, Ju–188's and Me–410's on the night of 29–30 May, and minelaying and a bombing attack took place in the Falmouth



TACTICAL TARGET. Le Mans Airfield, hit by Eighth Air Force heavy bombers in conjunction with the Normandy assault.

area early on 30 May. *Despite very favorable weather during the early part of the week, the absence of known overland reconnaissance aircraft west of Portsmouth was most noticeable. In view of the increasing imminence of Allied landing operations, this lack of interest in covering south coast regions as a whole was remarkable.*

Strong fighter reaction was provoked by major Allied raids on central and eastern Germany and Poland. The main effort was made on the 28th, when about 450 single-engine and 50 twin-engine fighter sorties were flown, of which approximately 200 were encountered near Dessau and the remainder in the Magdeburg and Strasbourg localities. It is estimated that 300/350 sorties were flown on 29 and 30 May. The reactions to attacks on France, Belgium, and western Germany remained negligible. Only slight reaction was aroused by RAF Bomber Command night missions to targets in France and Belgium.

Bombs fell at Falmouth and scattered points between Hampshire and Sussex on 1 June. Possible intruder operations on the night of 31 May–1 June were carried out by about 15 ME–410's, six of which were overland and dropped bombs in the Norwich region.

FW–200's from Trondheim carried out long-range reconnaissance on 5 days of the week, and Ju–290's from southwest France on one day. Other reconnaissance activity was generally on a low scale. Of two Ju–88 reconnaissance aircraft observed in the Orkneys-Shetlands area on the 30th, one was destroyed east of Kirkwall and the other came overland at Lerwick. Two Me–109 reconnaissance aircraft were destroyed south of the Isle of Wight on the 29th.

Dawn 4 June–Dawn 11 June

If more evidence is needed that the Allied landings in Normandy achieved complete tactical surprise, consider that there was no appreciable air opposition until the night of 6–7 June, when some 175 long-range bomber sorties are estimated to have been flown against shipping off the Cherbourg coast and against targets on the beachheads, including 55 sorties by aircraft carrying torpedoes and radio-controlled bombs. All available types of aircraft were used, including torpedo-carrying units from the south of France, but the attacks, especially those on shipping, appear to have been a complete failure.

Similar operations, including minelaying, were carried out on the following night, although the scale of effort fell off to about 160 sorties and to 100 or fewer on succeeding nights, probably because of bad weather.

Both long-range bomber and torpedo-bomber operations were conspicuously ineffective. The scale of effort was possibly below that anticipated due to unexpected weakness of the long-range bomber force; there had been no evidence of long-range bomber activity by daylight.

Small intruder operations were carried out off and over East Anglia on the night of 7-8 and 10-11, with an estimated 10 aircraft participating in each. Day and night reconnaissance was flown over the beachheads and the Channel, with fairly regular cover of the Straits and the Thames estuary as far as the Suffolk coast, and over the southern part of the North Sea.

For at least four nights of that week, Ju-290's operated over the Atlantic, probably in search of convoys, to the west of the Bay of Biscay, but no attacks were reported.

The main GAF fighter activity was concentrated against landing operations; little opposition was encountered by Eighth Air Force heavy bombers. *There was no immediate fighter reaction on 6 June, when provisional estimates amounted to only about 70 sorties against the Allied beachheads.* However, the tempo increased on 7 June with the arrival of sizable SEF reinforcements, and the estimated scale of effort rose to about 300 sorties, of which 60/70 were ground attacks. Estimated sorties on 8 June amounted to 525/550 in the battle area, including 75/100 ground attacks, and on 9 June, despite adverse weather conditions for most of the day, the GAF delivered some 500 sorties, including 110/120 ground attacks. These fell off on 10 June, with 60/70 ground attacks out of a total of 260/270 sorties.

There are strong indications that after four days of fairly intensive single-engine fighter operations and Allied night and day bombing of bases, enemy strength was considerably reduced and serviceability was probably not higher than 50 percent. In any event, it is ridiculous to think that the reaction encountered was anything like the force that could have been employed had the GAF high command elected to make a finish fight of it.

Some day the Luftwaffe's historians may publish their side of the story, may tell us why the opposition to the Normandy invasion was so weak. That account will be eminently worth reading.

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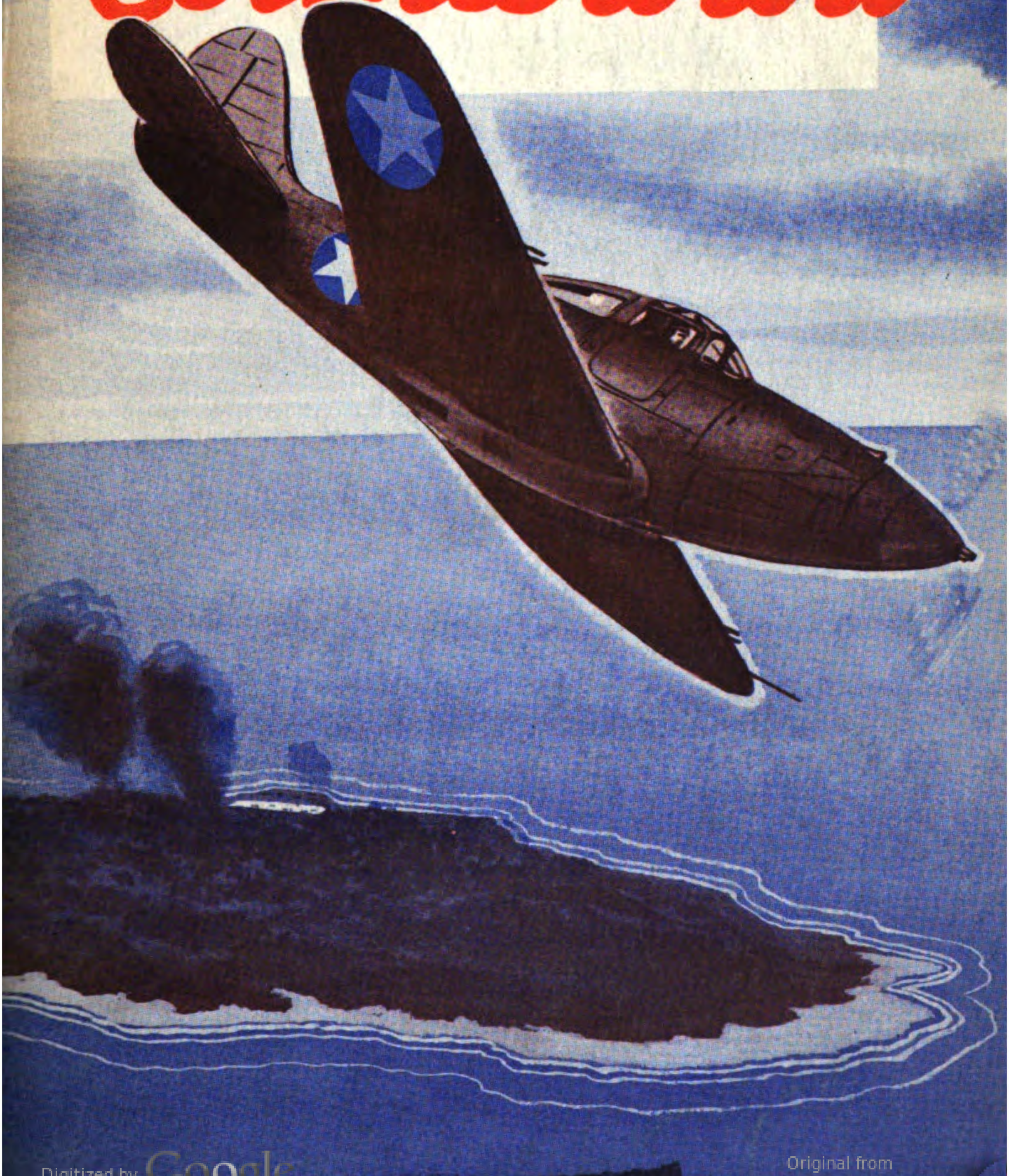
PACIFIC Counterblow



Wings at War Series, No. 3 [redacted]

Pacific Counterblow

THE 11TH BOMBARDMENT GROUP AND THE 67TH FIGHTER SQUADRON IN THE BATTLE FOR GUADALCANAL

An Interim Report

Published by Headquarters, Army Air Forces
Washington, D. C.

Office of Assistant Chief of Air Staff, Intelligence

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MAR 25 '47

FOREWORD

THIS is the third in a series of interim reports published by Headquarters, Army Air Forces. It was compiled from AAF Historical Studies prepared by the Historical Division, AC/AS, Intelligence and based upon histories of the 67th Fighter Squadron and the 11th Bombardment Group (H); Office of Naval Intelligence Combat Narratives, Solomon Islands Campaign Series; and various Marine Corps reports available in the AAF Intelligence library—all written on the basis of official records and firsthand observation. These accounts have been abridged and edited in order to provide for combat personnel in all theaters a succinct summary of the planning and execution of the Guadalcanal operations of the 11th Bombardment Group (H) and the 67th Fighter Squadron.

The conscientious and able work of staff personnel in the theaters makes possible the publication of this series, the intent of which is to cover the more important campaigns and individual missions in all theaters of operations.

Comments and criticisms are invited. They should be addressed to: The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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Lt. Gen. Millard F. Harmon, former Commanding General, Army Air Forces, Pacific Ocean Areas, who has been missing since 26 February 1945 when the aircraft on which he was making a noncombat flight in the POA was lost.

Pacific Counterblow

The South Pacific, Summer 1942

PEARL HARBOR secured for the Japanese the initiative in the Pacific. They chose first to strike southward. By March 1942 the Netherlands East Indies, and with them any opportunity of reinforcing the Philippines, had largely disappeared in the maw of Nippon's war machine. March and April a successful but less precipitate foe devoted to the initial digestion of his gains and the extension of his forces along the flanks of Australia. Already Australian security had thus become the first charge of U. S. forces in the South Pacific, and defense of Australia meant defense of the last remaining reinforcement route to the subcontinent—the 7,000 miles of island-studded Pacific seas lying between San Francisco and Sydney.

Twice more the enemy moved offensively. A thrust in early May against either Port Moresby or the Free French isle of New Caledonia, bastion of the supply route from the United States, was smashed in the Coral Sea. And after 6 June, with its ambitious two-pronged offensive against Midway and the Aleutians crushed at Midway, the Japanese fleet retired westward to lick its wounds. For the first time in the Pacific war, America possessed the initiative—a limited, precarious initiative, demanding the earliest possible exploitation.

How this initiative was employed is the history of the operation against Guadalcanal and Tulagi in the Solomon Islands. Primarily it was an operation to safeguard Australia's supply line, threatened

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The ranks of officers mentioned in this booklet are those which they held at the time of the events described herein.

first from Rabaul, secured by the enemy in January; then from Tulagi, where by May the Japanese were already well established. (It was at Tulagi on Florida Island that the *Yorktown's* aircraft carried out a successful strike during the Battle of the Coral Sea.)

In June grass was burning on Guadalcanal's Lunga Plain, one of the few spots in the Solomons where an airdrome could easily be built. Around 4 July, Jap troops and construction personnel moved ashore and in less than a month Allied search planes saw the first signs of what appeared to be a concrete runway.

The Tulagi-Lunga Plain combination was extremely convenient. Enclosed by the small islands of Tulagi, Gavutu, and Tanambogo, the harbor at Tulagi is deep and spacious; with air cover from Guadalcanal it presents an excellent naval base site. Backing this advanced base were Rabaul, only 565 nautical miles distant; Bougainville, with the important Buin-Faisi-Tonolei complex, protected from Kahili Field, at its southern tip; Kieta, where an airdrome was already being laid out—an impressive array of supporting bases. And from many lesser bases in the Solomons—from Gizo, Rekata Bay, Kieta and Buka Passage—seaplanes were already operating.

With Lunga airdrome complete, land-based bombers would be able to soften the New Hebrides for a thrust southward. If the Japanese were to be stopped short of a point where they could snap the lifeline to Australia, then Tulagi-Guadalcanal offered the last possible opportunity.

The man facing this problem was Vice Adm. Robert L. Ghormley, COMSOPAC. As Commander, South Pacific Area, Admiral Ghormley commanded all U. S. ground, air, and naval forces in his area, and certain New Zealand units as well. His air commander was Rear Adm. John S. McCain, who, as COMAIRSOPAC, controlled all land-based aircraft in the South Pacific Area, including those of the USAAF.

General Harmon Takes Over

Top Army commander in the South Pacific was Maj. Gen. Millard F. Harmon, who arrived in the theater to assume the title of COMGENSOPAC, Commanding General, United States Army Forces in the South Pacific Area, only a week before the Guadalcanal offensive opened. Subordinate to COMSOPAC, General Harmon was charged with the training and administration of all U. S. Army ground and air force troops in the South Pacific. His advent clarified the supply and administration of the string of island bases and lessened any possibility of Army units disintegrating organically under local Navy, Marine, or New Zealand control.

General Harmon had stepped directly from the post of Chief of the Air Staff. Moreover, the small staff which flew down with him to Noumea in the last week of July numbered such officers as Brig. Gen. Nathan F. Twining, future commander of the Thirteenth and Fifteenth Air Forces; Lt. Col. Dean C. Strother, future commander of the Thirteenth's fighters; and Col. Frank Everest who was to command its bombers. If Admiral McCain retained operational control of Air Corps units, he recognized that the wide dispersion and dissimilar composition of his air establishment made it impracticable to exercise his command directly. Training and a certain amount of tactical discretion remained to COMGENSOPAC and his subordinate commanders.

In July the Army Air Forces were mainly represented in the forward area by the 11th Bombardment Group (Heavy) and the 67th Fighter Squadron. The former disposed of 27 B–17's on New Caledonia and 8 at Nandi in the Fijis. The 67th mustered 38 P–39's and P–400's, all on New Caledonia. The P–400, to quote the men who flew it, was "a cheap version of the early P–39's." Additionally, there were on New Caledonia 10 B–26's with a dozen more in the Fijis.

The 11th Group and the Landing in the Solomons

DESPITE the fact that a workable basis for Army-Navy cooperation had been reached at a time when the June victory at Midway made it possible to mount an initial offensive against the Japanese, the remainder of 1942 loomed precariously for the Allies in the South Pacific. The Midway battle had only approximately restored the balance of fleet power. Shipping was extremely short. Only the 1st Marine Division, reinforced, could be spared for the assault on Guadalcanal. General Harmon found himself in command of units originally sent posthaste in early 1942 to garrison the stepping stones to Australia, units largely tied down to a defense for which they were scarcely adequate.

Nevertheless, preparations for the blow against the Guadalcanal area went forward. As early as April Tulagi had been designated the number one American objective in the Solomons. The Marines began arriving in New Zealand in mid-June; D-day was set originally for 1 August, then for as near that date as practicable. Arrangements were completed whereby General MacArthur's aircraft would search and bomb in the northern Solomons and strike the airdromes at Lae and Salamaua.

The final week in July saw the initial B-17's of the 11th Bombardment Group arrive in the South Pacific, the first squadron landing during a driving rainstorm at Plaines des Gaiacs airdrome on New Caledonia. The 11th had been based in Hawaii, was a veteran of Midway. Now, under the leadership of Col. Laverne G. Saunders, it was to participate in the assault on Guadalcanal.

The Army Air Forces, seeking to give air striking forces a mobility analogous to that of major naval units, had initially distrusted committing heavy bombers to fixed assignments in the islands. The area was described as "linear in type and of limited depth." Its defense, it was thought, could be accomplished more economically by holding major air striking forces at the extremities, and providing bases and logistical services for their rapid concentration against a threat to intermediate points. Originally this concept envisaged stationing heavy bombers only in Hawaii and Australia. However, in July the 11th Group was ordered to New Caledonia as the Mobile Force, Central Pacific, and below in Australia the 19th Group was named the Mobile Force in the Southwest Pacific.

Four days after the new designation, the squadrons of the 11th Group left Hickam Field, the 98th and 42d arriving at Plaines des

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In the early stages of the battle for Guadalcanal the AAF was represented by the 11th Bombardment Group (H) and the 67th Fighter Squadron. Later the 11th was joined by squadrons of the 5th Bombardment Group, and still later, replaced by the 307th Bombardment Group (H). Various other fighter squadrons stationed in rear areas, such as the 12th, 44th, 68th, 70th, and 339th, all eventually contributed detachments or moved up to the island as did the 69th and 70th Bombardment Squadrons (M). As the subtitle implies, this narrative is concerned primarily with the activities of the 67th Fighter Squadron and the 11th Bombardment Group (H). Thus the actions of the 19th Bombardment Group (H), located at Port Moresby, which were coordinated with the initial attack and subsequent actions on Guadalcanal, are not detailed here and deserve a separate narrative.

Gaiacs on the 21st and 23d of July, respectively. On the 24th the 431st landed at Nandi in the Fijis and the following day the pilots of the 26th set down their planes at Efate. It had been planned to base one squadron each at Plaines des Gaiacs, Koumac--also on New Caledonia—Nandi, and Efate, and advance these when practicable to the new base under construction at Espiritu Santo.

Lying directly in the path of a possible thrust from the Solomons, Espiritu had been a sort of no man's land. Admiral McCain, perceiving the value of the position to the contemplated seizure of Tulagi, had immediately upon his arrival in the theater in May requested that troops be sent in and an airfield constructed. The troops were sent but construction of the airdrome was not approved. Nevertheless, COMAIRSOPAC surveyed a site, built a road to it, and confidently awaited orders to complete the project; the orders came in July. All available troops pitched in and in 16 days an airstrip 5,000 by 200 feet was hacked out. On 30 July, Maj. Allen J. Sewart of the 11th Group's 26th Squadron set down the first B–17 on the new strip.

Pre-Assault Operations

For the Guadalcanal operation, Admiral McCain divided his shore-based planes into task groups. The 11th constituted the second task group, responsible for daily search of the southern Solomons and their western waters, for tracking important enemy contacts, and for execution of air attacks as directed. The dual role of search and bombing assigned the B–17's by COMAIRSOPAC's operations orders had been foreshadowed by his policy of placing the B–17's, together with the Navy patrol bombers, under both Air Patrol and Bomber Commands at South Pacific air bases. The great areas of the Pacific, shielding a powerful and aggressive enemy fleet, made search a prime necessity.

With its service crews still at sea, the 11th nevertheless tackled vital photo work almost on arrival, flying photographic missions over the Tulagi-Guadalcanal-Gavutu area on 23 and 25 July and getting its first taste of local fighter opposition when float Zeros ineffectively intercepted both missions.[1] During the very few days remaining before the departure of the Marines for Guadalcanal, strenuous efforts were made to procure information on Japanese positions. Maj. Gen. Alexander A. Vandegrift, commanding the 1st Marines, was experiencing a woeful lack of photos, and Navy charts were badly out of date. In an effort to remedy this situation the 435th Squadron of the 19th Group during June and July had flown a number of reconnaissance missions over the Guadalcanal-Tulagi area from Port Moresby.

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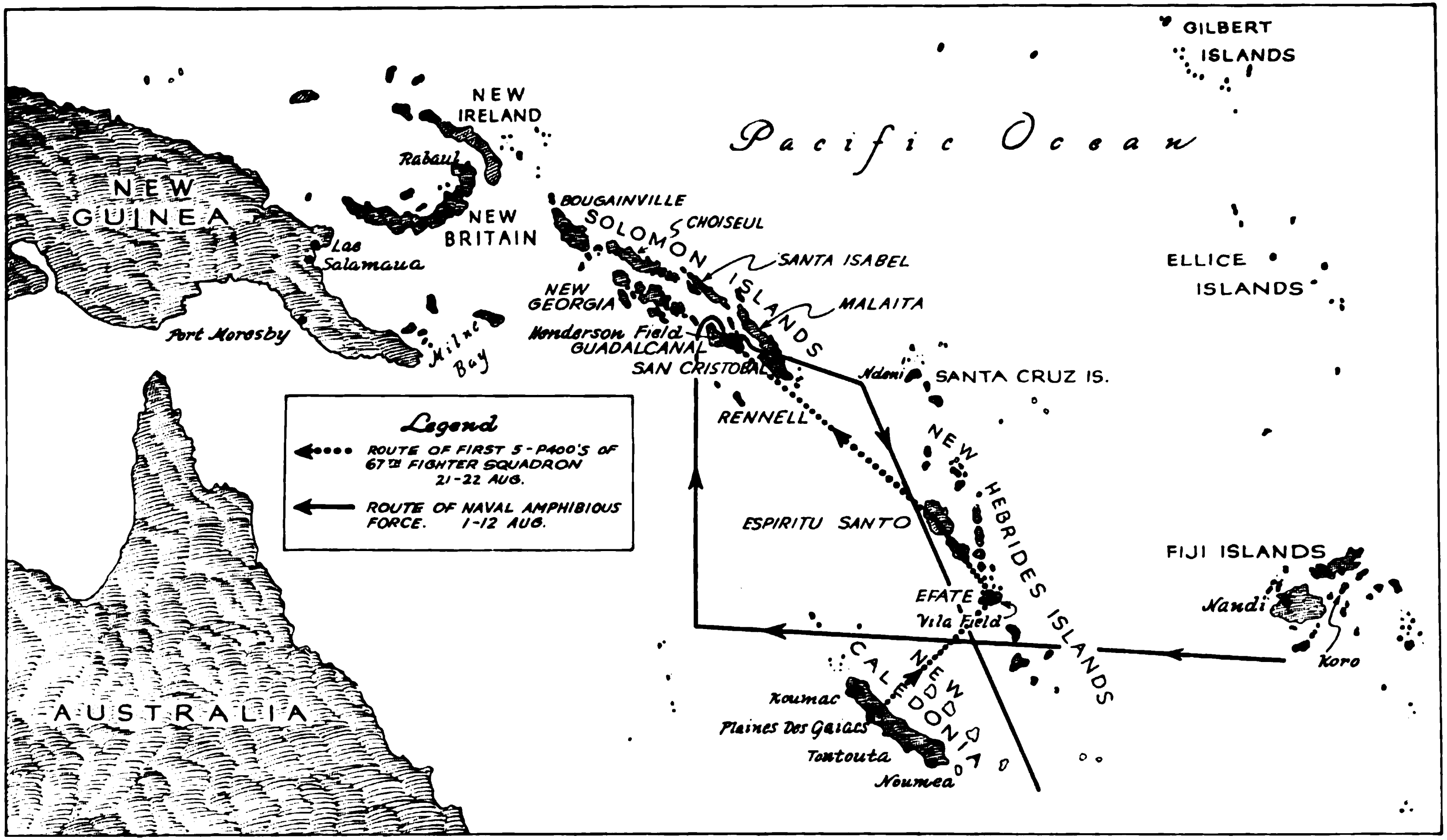
[1] The greater part of the operations described in this narrative took place before the standard names "Hamp," "Zeke," etc., had been adopted for reporting Japanese aircraft.

General Vandegrift particularly desired recent photographs of the north coast of Guadalcanal, the area he was called on to assault. He received only two, a print of Tulagi and one of the Lunga Point-Kukum area—both dropped on a carrier by light planes, developed, and forwarded to the Marine commander by COMAIRSOPAC, and constituting the first photos to reach General Vandegrift since 24 June.

At no time during 1942 were trained Army personnel or Army photographic equipment available for photographic work. Cameras came from the Navy, photographers from the Marines. Only the 11th's B–17's represented the Army, and this condition remained SOP until AAF photo and mapping units arrived in 1943. "Quackenbush's Gypsies," as Lt. Comdr. Robert Quackenbush's naval photo personnel were named, regularly flew with the heavies on photographic coverage of the Solomons.

Colonel Saunders' bombardment directive from Admiral McCain was both general and concise: to hit Tulagi and Guadalcanal with maximum strength from 31 July to 6 August, inclusive. COMAIRSOPAC left the group commander free to carry out this task as he saw fit, and the 11th forthwith inaugurated heavy bombardment against the Japanese in the South Pacific. During the 7 days, in addition to 22 sorties for purposes of search, the group flew 56 bombardment sorties, a most creditable performance in view of the primitive conditions under which operations labored.

Although the advanced field on Espiritu Santo was reported ready, Colonel Saunders was skeptical as to its service facilities and decided to open his attack from Efate, 710 nautical miles from the target at Guadalcanal. For his first mission on 31 July, Colonel Saunders mustered every plane possessing a radio compartment tank. Since each of the nine aircraft thus equipped also carried a bomb-bay tank, full bomb loads were impossible. But in spite of this considerable reduction in striking power, the initial blow was a success. Led by



The Solomons and Related Areas.

Colonel Saunders, the Forts flew the 710 miles to Guadalcanal under the protection of bad weather and unloaded their bombs from 14,000 feet. The first flight, carrying 500-pounders, struck at the new landing strip, while the remaining six aircraft ravaged the supply dumps in the Lunga Point area with 100-pounders. Resistance was slight, the AAA ineffective, and the Zeros at Gavutu, probably without functioning radar, failed to leave the water in time for interception. The bombers came through Mission One against Guadalcanal undamaged.

It was determined that Lunga Point held the chief concentrations of supply and personnel and first claim to Colonel Saunders' attention. Next ranked the nearly complete Lunga airdrome, shortly to become Henderson Field. Tulagi also was to receive a quota of bombs almost daily.

Thus was the pattern set. On 1 August the B-17's bagged two Zeros, on the next day they got one and started fires in the Lunga and Tulagi storage areas. By the 3d, reports had come in of land-based Zeros on the Lunga field and on 4 August five enemy fighters intercepted a three-plane flight over the target. In this engagement a float Zero, flaming and pressing a close attack, struck a B-17 near the No. 3 engine, causing an explosion which destroyed plane and crew. This, the first destruction of one of our aircraft by ramming, was considered the result of a Zero out of control rather than intentional self-sacrifice.

With the field on Espiritu operational by 1 August, B-17's headed for Guadalcanal were able to take on full bomb loads, fill their radio tanks at Efate, and refuel at Espiritu on the return leg. Tulagi and the Kukum area of Guadalcanal were thus bombed on 5 August, when another B-17 was lost; and on D-day, 7 August, two search planes dispatched to cover the Solomons sector to a depth of 700 miles from Espiritu, by that time the main base, took off at 0300 with instructions to avoid the target area where the attack was scheduled at 0530. One aircraft failed to return.

Guadalcanal Assault Opens

Below the searching B-17's the battle of Guadalcanal was unfolding. Two major task forces had been set up for the occasion: Rear Adm. Leigh Noyes commanded the supporting carriers, Rear Adm. Richmond K. Turner the amphibious force which would undertake the assault. Over-all command of these groups was vested in Vice Adm. Frank Jack Fletcher on the *Saratoga.*

On 31 July the amphibious force had left Koro Island in the Fijis, where it had proceeded from New Zealand to hold landing rehearsals. As the fleet cleared the New Hebrides the weather changed to a complete overcast, effectively hiding the force from enemy search planes. Navy PBY's, meanwhile, operating from Ndeni in the Santa Cruz group towards enemy bases to the north, reported no hostile concentrations. At 0133, 7 August the dim bulk of Guadalcanal could be made out, and the assault forces slid past Savo Island, the one to the north headed for Tulagi, the southern standing in for the Lunga area. The surprise was complete.

At 0613, the cruiser *Quincy* opened on targets near Kukum on Guadalcanal and 2 minutes later carrier planes, appearing on schedule, joined the attack. Simultaneously the bombardment of Tulagi commenced. The landing at Guadalcanal occurred without opposition. Carrier-based aircraft from the *Enterprise* and the *Saratoga* shielded the operation. Instead of the 5,000 enemy estimated on the island, a mere 600 Japanese were reported by prisoners and these promptly took to the hills. The Marines met relatively light opposition on Guadalcanal during the first day, but at Gavutu and Tulagi, across Sealark Channel, resistance was fierce and these islands were not mopped up for several days.

On the 8th the Marines occupied Lunga airdrome.[2] The runway, damaged from 11th Group attacks, was rapidly reparable, and in addition to this important field, large semi-permanent camps, finger wharves, machine shops, radio sets, and an ice and power plant fell to the Marines. These gains, however, were not to be consolidated in peace. The Japanese reacted promptly with air and naval forces, and on the afternoon of D-day hurled two heavy air attacks at the transports lying off Guadalcanal.

The evening of the 8th, Admiral Fletcher requested permission to withdraw his carriers. Combat with raiding enemy aircraft and other causes had reduced his carrier strength from 99 to 78 fighters.

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[2] On 17 August this field was unofficially designated Henderson Field after Marine Maj. Lofton Henderson. Construction begun by the Japanese was carried on by the Marine 1st Engineer Battalion until the arrival of the 6th Naval Seabee Battalion. In November 1942 Fighter #1, one mile East of Henderson, was rendered operational by the 6th Seabee Battalion and had been used in emergencies as early as October. Before the end of the year Fighter #2, west of Henderson, was also in operation.

Fuel was running low and the presence of large numbers of enemy bombers in the area presented a serious menace. Admiral Ghormley agreed to the request late that night and towards morning the Air Support Force began retirement to the south. Its withdrawal left the amphibious force dangerously exposed to enemy air, and the decision was consequently taken to withdraw the remainder of the invasion fleet at 0600 the following day. Previously it had been planned that the transports would unload until D plus 4.

On the 8th the Japanese Navy took a hand. Through the moonless, Solomons night a Japanese task force, slipping down past Savo Island, closed with the Allied cruisers protecting the transports off Guadalcanal. Searchlights and flares illumined the sea; then the sudden shock of shell and torpedo—and when the Japanese fleet retired into the night it had sunk four heavy cruisers and one destroyer, the core of the forces patrolling off Savo Island. The beachhead was uncovered. The Marines were left to shift for themselves, and on 9 August the transports up-anchored for the safety of Noumea.

For a time, the 11th settled back into its search routine. On days immediately following the landings, the bombers covered the Lower Solomons on sectors ranging from 286° over to 316° from Espiritu to a depth of 700 to 800 miles. Ordinarily, contact was with friendly surface forces. However, on 9 August, two light cruisers, two destroyers, and a number of seaplane tenders were reported heading for Rekata Bay on Santa Isabel. Eight B–17's were bombed up and took off but, despite ideal visibility, failed to sight the enemy. Daily searches through 14 August failed to reveal anything significant—only a handful of landing barges on Florida Island.

By the 15th the Japanese were more in evidence. Destroyers, cargo vessels, even light cruisers began to frequent the central Solomons, and Gizo Island and Gizo Bay in the New Georgia group became favorite target areas for the 11th. Moreover, the tedium of the long searches was apt to be broken by engagements with the huge Japanese patrol aircraft, the four-engine Kawanishi 97's, or their only slightly smaller successors. These Goliaths were slower and less maneuverable than the B–17's; their 20-mm. cannon were outranged by the .50-calibers. Invariably Colonel Saunders' pilots attempted to close with them. The first victim fell to the crew of Capt. W. Y. Lucas when, after a 25-minute combat the Kawanishi, attempting to settle her damaged bulk on the sea, was blown up by the Fort's tail gunner. By 30 September the 11th had encountered 21 Kawanishi; 5 were destroyed and 7 damaged.

Meantime the enemy prepared his counterblow. On 12 August Admiral Ghormley had reported naval concentrations at Rabaul and in the Bougainville region. A week later these concentrations began to appear in the Buin-Faisi area, and on the 20th the Admiral warned Colonel Saunders that the task forces to retake Guadalcanal already were moving down from Truk and Ponape. The grinding routine of sea search became of utmost importance. Day after day, the Forts, taking off from Espiritu at 0300, crossing over Tulagi at sunrise and, scouring the sea to the northwest, logged 1,600 miles of open-water flying.

Daily action had taken its toll. From 31 July to 20 August, 11 B–17's were lost, 8 operationally, 2 at sea, only 1 in combat. Men and equipment stood up well against the enemy. Japanese gunnery, both aerial and AAA, was uniformly poor and the supposedly fanatical enemy pilots showed little eagerness to close with the B–17's. During the 8 days of intensive operations preceding the landings, enemy fighters were engaged on all but two missions to the Guadalcanal-Tulagi area and other than in the "ramming" incident, no Fort was lost to the float planes. The few hits scored on the heavies were by 7.7-millimeter fire and not very damaging. Three crew members were slightly wounded. The pilots learned that the Japanese always attacked singly, that, if the Forts turned their formation into him, he would always draw off at the fire of the turret guns. Bad weather, not the Zero, was the chief antagonist. Lack of homing facilities and radio direction-finding equipment brought down more B–17's than enemy pilots did.

Operational Problems

In the Pacific theaters nature and distance are usually as formidable a foe as the Japanese. When Colonel Saunders and his 98th Squadron set their ships down on Plaines des Gaiacs on 21 July, they found a red dust strip hacked out of a swamp. High in iron oxide, this dust, sifting through the filters, honed out the cylinders, so that shortly the B–17's were fortunate to fly 6 hours with a full load of oil. Additional complications were lack of service and maintenance personnel.

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Nine maintenance men for nine aircraft were all that could accompany the 26th to Efate, and these nine served additionally as ground crews during the subsequent 3-week period of intensive operations. Under such circumstances, a large share of the service and maintenance burden fell upon the combat crews. The 26th owed a debt of gratitude to the Negro enlisted men of the 24th Infantry Regiment who helped to service the planes and even improvised spare parts. Artillerymen messed the airmen on Efate, while over on Espiritu the entire 98th Squadron, not excepting Colonel Saunders, slept under trees or wings, or in the Forts themselves.

The 11th had no water carts; two of its eight Cletracs had arrived at Nandi, when they were needed at Espiritu. The shops aboard the USS *Curtiss,* Admiral McCain's headquarters, contributed tow bars; but homing devices and navigational aids could not be improvised.

At Espiritu existed a fair example of South Pacific logistics. On 18 August Colonel Saunders described its unloading facilities as "one barge, a sandy beach and a prayer." Heavy equipment was slung over the side of cargo vessels into a lighter. Ashore there were no cranes and the small, finger piers made of coconut logs salted down with coral washed out and disappeared after 2 or 3 weeks' use. Since the supply officer seldom was informed of arrival dates, boxes and crates accumulated in the coconut groves. There was no question of living off the country; each item of food, clothing, and housing had to be brought in. The mud was there in abundance. Espiritu possessed a foot-thick covering of soft black dirt, a quagmire after the tropical rains.

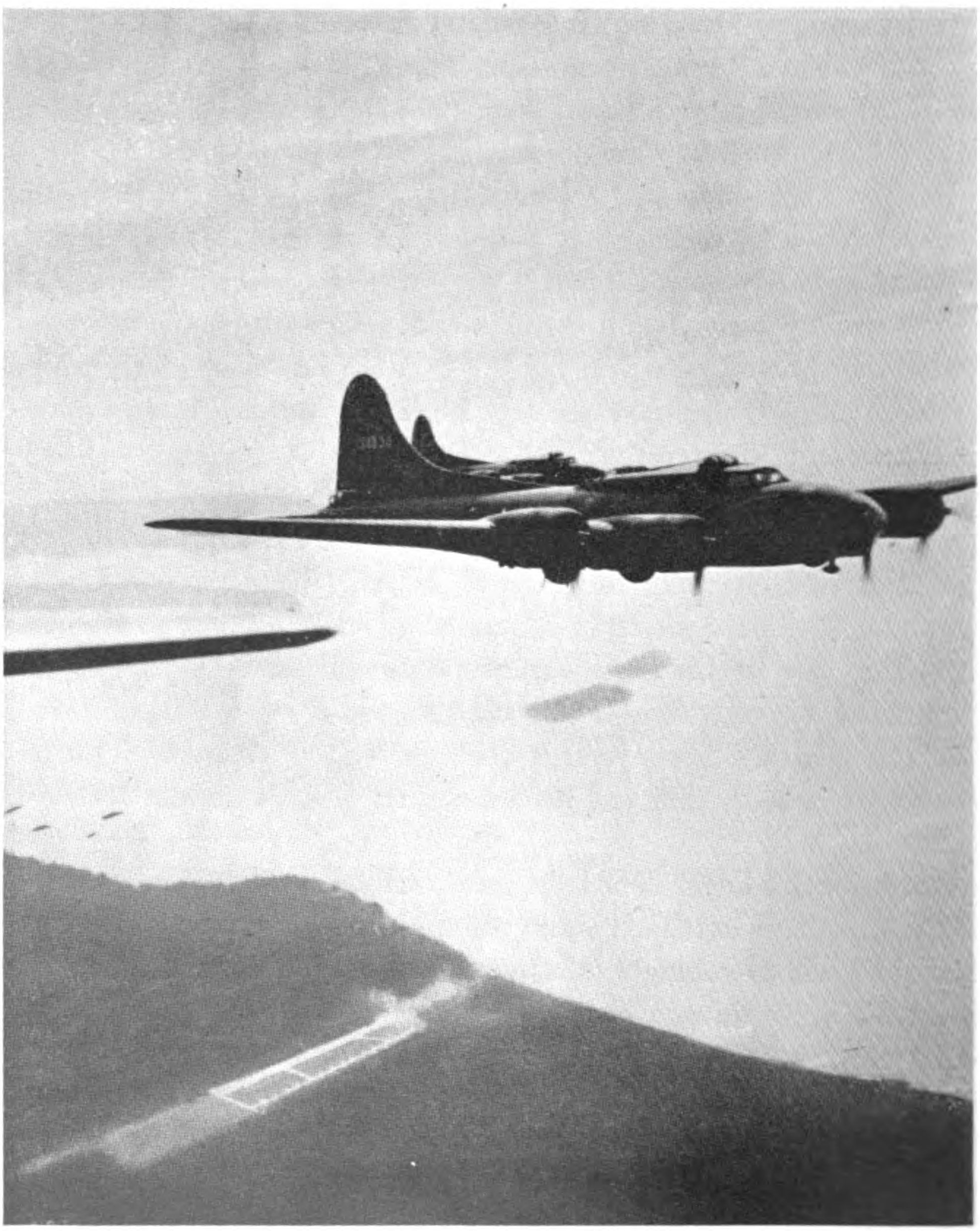
The Navy had moved .50-caliber ammunition and 300,000 gallons of gasoline to Espiritu in preparation for the 11th. Fuel consumption had been estimated for 2 weeks of operations and a safety factor of 100 per cent allowed, but the supply was exhausted in 10 days and only the timely arrival of the *Nira Luckenbach* with 3,000 drums of gasoline prevented operations from coming to a sudden halt. Getting the fuel out of the drums and into the tanks of the B–17's was one of those impossible jobs which somehow got done. Gas trucks and trailers did not exist; the steel drums were dumped over the ship's side, floated ashore in nets, hand-rolled up under the trees, and dispersed in dumps of 20 to 30. From these they were loaded on trucks, rolled up on stands, and emptied into the tank wagons which serviced the aircraft. On 6 August, all available hands—and available hands included Colonel Saunders and Brig. Gen. William C. Rose, who commanded ground forces on Espiritu and Efate—worked a bucket line for 20 hours in a driving storm to put 25,000 gallons of gasoline aboard the bombers. But such labors were not enough, and strike missions were delayed for lack of service facilities.

Espiritu's airdrome was no Randolph Field. A narrow strip cut partly from a coconut grove, partly from the encroaching jungle; revetments barely deep enough to keep a B–17's nose off the runway and so narrow a man had to stand at each wing tip to guide the pilots out to the short taxiway; no lights. Bottles of oil with paper wicks flickered along the runway and jeep headlights marked its end as the early morning missions took off.

The squadrons of the 11th were distributed as follows: The 42d at Plaines des Gaiacs; the 98th at Espiritu, where the 26th subsequently joined from Efate; and the 431st at Nandi. Headquarters was at Efate, but Colonel Saunders maintained a command post on Espiritu and flew part of his headquarters personnel there on 10 August. Nandi, the most rearward of the bases, was clean and quiet and served as a rest area and a convenient place for engine changes. Colonel Saunders regularly relieved his units after 1 week in the forward area.

Operational control defied the field manuals. The wide dispersal of the units and unreliable radio communications made contact with the squadrons exceedingly difficult. Colonel Saunders could exercise direct control only over the 14 Fortresses at Espiritu, and even this was complicated by lack of field telephones and motor transport. He was running four search missions daily and holding six aircraft for a striking force. In an emergency he might supplement the latter with six B–17's from Efate, but he strongly doubted that the Efate contingent could hit the target at such a distance. He advised General Harmon that additional fields were needed on Espiritu.

By the 18th of August, the supply situation of the group had become critical. Six ball turret doors had already broken off and no spares were available. Turbosupercharger regulators were giving trouble, as were flight and engine instruments. The dusty fields necessitated constant engine changes; Nandi's 12 spares were already in service and the next change at Plaines des Gaiacs would exhaust



HEADING FOR HOME. After a successful attack on the shipping shown in the lower left of the photograph, a B–17 of the 11th Bombardment Group (H) wings over Kahili Airfield as enemy fighters taking off raise clouds of dust. The picture was taken looking southwest. The surface ships are off the settlement at Buin, and the finger of water above the wing at the left is Tonolei harbor.

the supply in New Caledonia. But in spite of such operational aches and twinges, the 11th was prepared to take part in the series of actions known as the Battle of the Eastern Solomons, the first Japanese attempt to retake Guadalcanal.

Battle of the Eastern Solomons

Following the disastrous Savo Island drama, there had been a lull on Guadalcanal. The Navy ran in small reinforcement convoys, but operated its task forces well to the southward of the island, out of range of Japanese search planes; and the enemy seized the opportunity to reinforce Guadalcanal on his own account. Nightly, his destroyers and cruisers shelled the Marines, for the most part without let or hindrance. The beginnings of the "Tokyo Express" were discernible.

However, on 19 August a light cruiser venturing on such a reinforcement mission was unwisely left exposed in Sealark Channel by day. A searching Fort spotted her, banked for a bombing run. The delighted Marines saw columns of dark brown smoke pour from abaft the warship's mainmast. She made for the open sea beyond Savo, her fantail afire, and later sank.

On the 23d the Navy received warning that the Japanese were moving on the Solomons from the north. Carrier task forces, including the *Saratoga,* the *Enterprise,* and the new *North Carolina* were readied to meet the threat. On the 24th the *Saratoga's* torpedo and dive bombers, engaging the Jap carrier *Ryujo,* sent her into an evasive turn, dived in a coordinated attack, and hammered their bombs the length of her deck. Fierce air battles during the day all but stripped the enemy carriers of their aircraft and by nightfall the enemy fleet, badly hurt, retired. The damaged *Enterprise* returned to Pearl Harbor for repair.

In relation to its striking power the 11th Group played an important role in this action. On 24 August at 1215 Colonel Saunders was advised of a contact with an enemy carrier force 720 miles from Espiritu. Admiral McCain, aware that a B-17 strike would involve hazardous night landings, left the attack decision to Colonel Saunders. The risk was accepted. Two flights of heavies were dispatched separately, three Forts under Maj. Ernest R. Mannierre and four led by Major Sewart.

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At 1745 the three-plane flight attacked a carrier, dead in the water and under tow by a cruiser or large destroyer. On the first run the bombs overshot and the Forts banked for another try. Four direct hits were claimed. (Whether this vessel was the *Ryujo,* blasted more than an hour before by the *Saratoga's* planes, or another small carrier is unknown.)

When this flight returned to Espiritu the night landing took its toll. Espiritu's field was just a wide slash through the jungle, with low hills close in. As the planes approached, a tropical rainstorm drenched the field and the darkness was complete. Lt. Robert E. Guenther's plane, the No. 4 engine failing, went into a steep bank and crashed into the hillside. The pilot and four of the crew were lost.

Forts Assail Japanese Ships

Sixty miles to the eastward of Major Mannierre's strike, Major Sewart's four B–17's surprised a second Japanese armada at twilight. Below the Forts plowed a possible small carrier, with escort of one battleship, four light cruisers, and four destroyers. The Forts steadied for the run. Two or more hits were claimed on the carrier, but final results were observed only by one ball turret gunner who contended that the warship could not have been a carrier since the 500-pounders had "knocked her turrets off." The attack did not go unopposed, and of a swarm of Zeros attacking the bombers five were surely, seven probably destroyed. Two of the Forts were damaged and all were desperately low on fuel, but Major Sewart led his flight back to Efate intact.

Again on the 25th the heavies saw action. The preceding day Lunga airdrome, now named Henderson Field after the commander of the Marine dive bombers at Midway, had been attacked by land- and carrier-based planes, the latter probably from the *Ryujo.* Newly arrived Marine pilots, defending the Guadalcanal lodgment, knocked down 21 of the attackers for a loss of 3. At midnight the Marine positions were shelled by four enemy warships, one of which may have been sunk by dive bombers from Henderson. A dawn air attack was anticipated but none came.

At 0835 on the 25th eight escorted dive bombers from Guadalcanal uncovered the main Japanese occupation force about 125 miles to the north. One large and three small transports, escorted by a heavy cruiser, light cruisers, and four destroyers, presented a fat target. Thousand-pounders gutted the large transport and damaged the heavy cruiser. Eight additional B–17's, leaving distant Espiritu at 0617, broke the back of either a cruiser or a destroyer with three direct hits from 500-pounders and at 1015 saw her sink. By noon of the 25th the Japanese were making all speed to the north and Guadalcanal was, for the moment, secure.

From this telling action, the 11th returned to the tedium of search duties and primitive operational conditions. The enemy reverted to a pattern of harassing attacks and minor reinforcement efforts. At noon on the 25th, 21 Jap bombers pounded Henderson Field, and that evening destroyers landed reinforcements at Cape Esperance and came down Sealark Channel, guns ablaze. By this time, however, Guadalcanal had the means to defend itself, partially at least, against such measures; Marine fighters and dive bombers were based on the island and elements of the USAAF's 67th Fighter Squadron had arrived.

The Jagstaffel

EXCEPT for lone, cruising B–17's, the Marines saw few friendly aircraft for almost a fortnight after the withdrawal of the Navy carriers on the night of 8 August. Meanwhile, back-breaking labor was completing the unfinished Japanese air strip, and on the afternoon of the 20th, the stubby little carrier *Long Island,* from some 200 miles southeast of Guadalcanal, catapulted two Marine squadrons, VMF–223 with 19 F4F–4's (Grumman Wildcat fighters) under Maj. John L. Smith and VMSB–232 with 12 SBD–3's (Douglas Dauntless dive bombers) under Lt. Col. Richard C. Mangrum.[3] These were followed in 2 days by five long-nosed Army fighters, P–400's of the 67th Fighter Squadron, under Capt. Dale Brannon.

The P–400's which flew into Henderson on 22 August inaugurated a route over which many an Army fighter was destined to pass before the Japanese were driven from the Lower Solomons. In none too short hops they had flown all the way from New Caledonia, employing the Atlantic technique—fighters, equipped with belly tanks, shepherded by bombers or transports.

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[3] TBF's, Grumman Avenger torpedo bombers, later appeared on Guadalcanal.

Leaving Blaines des Gaiacs on 21 August, Captain Brannon's flight of five hopped 325 miles to Efate, 180 more to Espiritu. The following day, with gas tanks topped off after the warm-up, the P-400's tackled the 640 miles to Henderson. Gas consumption had been predicated upon low engine speed, a lean mixture, a 15-mile tail wind, and, in Captain Brannon's opinion, a landing powered by the proverbial fumes. Imperfect navigation and enemy fighters were written off.

The P-400's flew on the deck, at 200 feet, through mist and low-hanging clouds. In clear spaces, they spread out; when weather loomed ahead, they snuggled under the navigating B-17's wing. A second Fort followed with rubber boats, to be tossed to the pilots if they bailed out. After 3¾ hours of flying, all five planes were set down on the Lunga air strip. The following day, Lt. Robert E. Chilson with 30 enlisted men of the 67th's ground echelon arrived off Lunga in the transport *Fomalhaute;* and when Capt. John A. Thompson brought in nine more P-400's on 27 August, the 67th was ready for action.

The 67th Fighter Squadron

If hardships prepare men for hardships, the 67th was prepared for Guadalcanal. Its personnel had sailed from New York in January 1942 in a crowded transport with inadequate water tanks—the men had received a daily ration of one canteen for washing, drinking, and shaving. After 38 days at sea they were rested for a week at a camp near Melbourne, Australia, and on 15 March disembarked on New Caledonia, where the inhabitants, military and civilian, momentarily expected the Japanese.

The 67th's airplanes were not only in crates but of a type only two of its pilots had ever flown. The 67th's new home was a half-completed airfield up at Tontouta, 35 miles from Noumea. Its one combination truck and trailer took one of the crated planes to Tontouta every 8 hours, alternately groaning and highballing over the mountainous road. When the crates were pried open instructions for P-39D's, F's, and K's were found, but none for P-400's; neither were the mechanics familiar with the plane. Still the work of assembly went forward. The men slept under shelter halves, the officers in a farmhouse—44 of them in parlor, bedroom, and earth-floored basement. All united in cursing the sudden, unpredictable rains and in fighting the mosquitoes.

Tools for assembly consisted of 10 kits of simple first-echelon maintenance tools. Lines were found plugged with Scotch tape; one P-400's electrical circuit had evidently had the attention of a factory maniac: when the flap switch was pressed wheels would retract; when the wheel switch was pressed the guns would fire. Nevertheless, in less than a month 41 planes were assembled with the aid of the 65th Matériel Squadron, and the pilots were checked out with only a single accident. The squadron, finding that the P-400's instruments were inferior, learned how to fly without them. Spare parts all came from salvage; and one plane, "The Resurrection," eventually evolved as a 100-per cent mongrel.

First Action

When Captain Brannon and his pilots landed at Henderson, action was not long in coming. The Marine pilots had pointed out on a little knoll near the runway the Japanese pagoda which served as Allied air operations headquarters. Near it was a flagpole up which a black flag was run when an air raid threatened. There was no real warning system—the first radar did not function until September—but from other sources reports of approaching enemy formations were received.

On the hot, sunny afternoon of the 24th, pilots and ground crews were working around the P-400's when the black flag was hoisted. Already the drone of engines could be heard. Two of the 67th's pilots made a run for their planes, Captain Brannon and Lt. D. H. Fincher taking off with the Grummans in a cloud of dust. Thirty seconds later the bombs hit. The P-400's staggered off over the palm trees and evaded the Zeros sweeping down to strafe. The Grummans climbed to 8,000 feet, knocked down all but one of the nine enemy bombers, which may have come from the doomed *Ryujo* off to the north. The Army pilots happened on a wandering Zero, pumped lead until it exploded.

The Marines, living largely on the Japanese quartermaster, introduced the pilots to life on Guadalcanal. In the green, canopied Marine tents were straw sleeping mats and enamelware eating bowls—both Japanese. Also Japanese were the chow, largely fish and rice,

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the cigarettes, and even the caramels. Socks, always too short, and loincloths were also available by courtesy of the Japanese QM. And across the river, a bare 200 yards away, was the enemy, with his snipers always alert for U. S. officers' insignia.

Until the arrival of VMF–223 and VMSB–232, the Tulagi-Guadalcanal area had been without air resources. Moreover, few supplies had come through to the beachhead. General Vandegrift had thrown a perimeter defense around the airfield upon its capture and was able to set up one battery of 90-millimeter guns and 58 automatic weapon positions against enemy air raids. The F4F–4's were immediately assigned the air defense of the area and the SBD's began to conduct long single-plane searches over enemy positions at Guadalcanal and northward up to New Georgia and Santa Isabel. Operating under Marine command, the P–400's soon took up part of the burden. On the 25th, they were up on dawn-to-dusk patrols over Henderson and on the 26th two pilots flew reconnaissance around the entire Guadalcanal coastline.

By the last week in August, Japanese tactics in the Solomons had begun to take form. In the Buin-Faisi area of Bougainville, at Vella Lavella on Kula Gulf and at Rekata Bay on Santa Isabel, the Japanese had bases easily supplied from Truk and Rabaul. By September, enemy men and supplies were being loaded on fast vessels—destroyers or cruisers. These marauders, hiding from the Henderson-based aircraft during daylight, by night came fast down "The Slot" between the parallel lines of islands, landed men and supplies, stood off Henderson Field, shelled it, and were generally safe in the central Solomons by daylight. Thus the enemy in the Guadalcanal bush would be reinforced to the point of mounting a final attack on the beachhead, at which time other Japanese, supported by a sizeable portion of the Imperial Navy, would be brought down from the Mandates as an occupation force. Such actions were feasible so long as the enemy controlled the sea approaches to the Lower Solomons. Once these were lost, as they were in the mid-November engagements, the enemy was obliged to rely for reinforcements solely on the Tokyo Express.

Meanwhile, air attacks on Henderson were carried out almost daily from Rabaul via Kahili Field in southern Bougainville and various harassments maintained against the American garrison. These latter were ingenious sleep-destroyers. "Oscar," a sub, surfaced nightly in the dark off Lunga, reconnoitered, threw a few shells at either Tulagi or Guadalcanal. After midnight, an asthmatic two-engine bomber, variously named "Louie the Louse," "Washing Machine Charlie," or "Maytag Mike," would lay a stick of bombs across the field.

The 67th performed its daily patrols at the dangerous medium altitude of 14,000 feet. The planes could struggle a little higher, but the pilots, without oxygen,[4] could not make long-sustained flights at this altitude. The P–400's days as an interceptor were numbered.

Fail to Reach Bombers

On 29 August came the first test. The P–400's were scrambled at noon to meet 18 enemy bombers with the usual Zero escort. Twelve went up in flights of four, climbed to 14,000, and, to quote the squadron's historian, "staggered around, looking closely at all spots within their vision to make sure they were just spots and not enemy formations." The bombers rode safely above, at 17,000 until the Grummans hit them, knocking down four bombers and four escorts. The discouraged P–400's returned to a runway swarming with men. The strip seemed to have sprouted bushes; as it turned out the ground crews were using them to mark bomb craters. Ammunition was exploding; grass, hangars, and aircraft were afire; and scores of enemy snipers in the trees across the river.

30 August was a busy day. It began for the 67th at midnight; the SBD's had been sent on a hunt for enemy destroyers and the Army pilots were continuously on the alert until dawn, when their regular duties began. That day these consisted of maintaining combat air patrol over four friendly destroyers at Tulagi. The enemy raid was due at about noon—"Tojo Time"—as it was known from the regularity with which the enemy appeared at that hour. The coast watchers reported 22 single-engine planes coming in from Buka Passage and at 1130 all aircraft came in for reservicing.

It was reasoned that the Japanese would not send Zeros down alone, so the single-engine aircraft must be dive bombers and their target the ships at Tulagi. Eight Grummans and 11 P–400's were in commission and were disposed to meet the expected attack. Four P–400's were to patrol over Tulagi and hop the dive bombers as they pulled

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[4] These P–400's had been intended for export to the British and were equipped with the British high-pressure oxygen system. No high-pressure oxygen bottles were available at either New Caledonia or Guadalcanal.

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out; seven cruised the towering cumulus at 14,000 feet to engage the enemy as he started down. The Grummans were somewhat above the latter group.

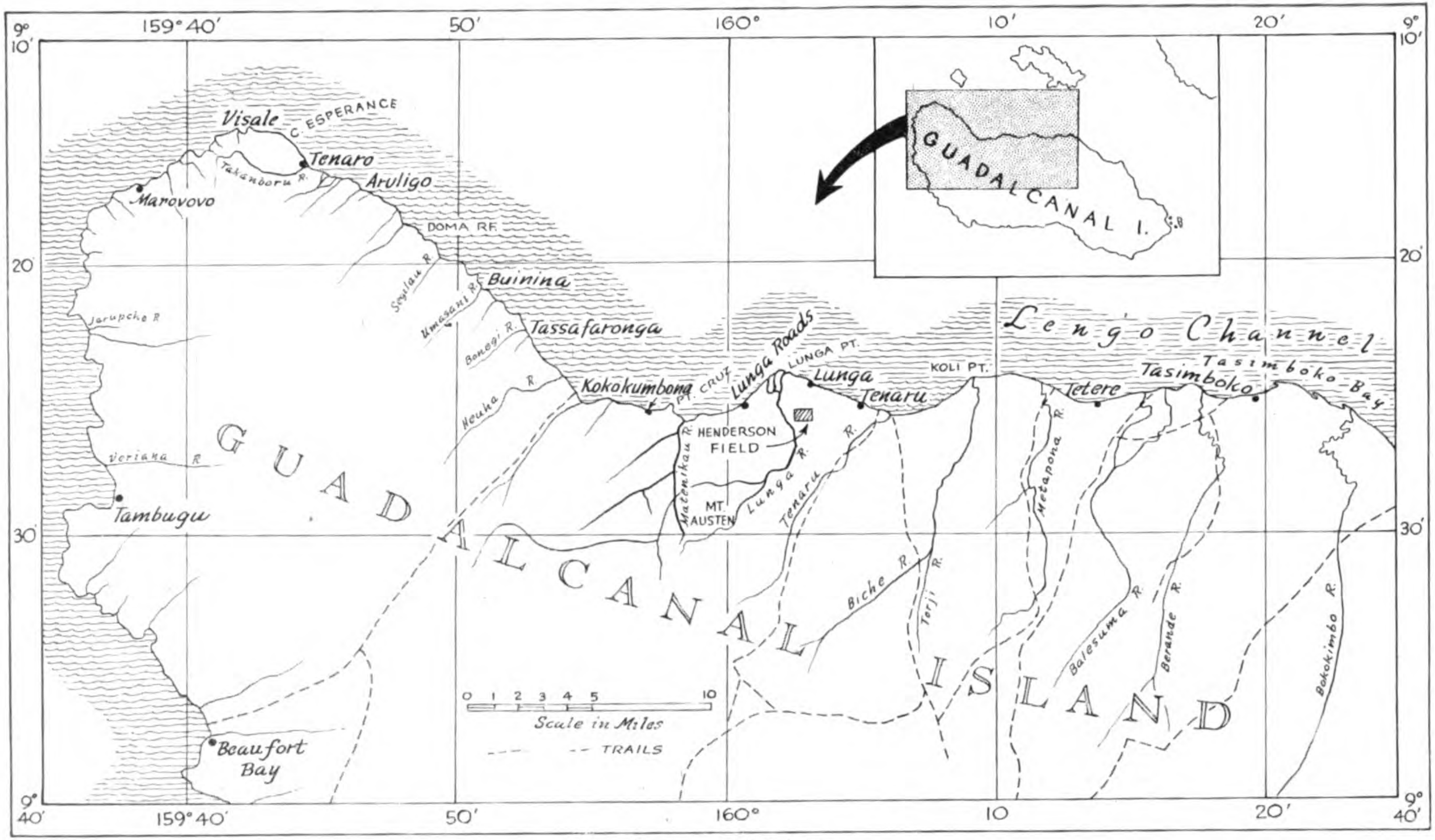
The seven P-400's had been cruising for about 30 minutes and already were feeling lack of oxygen when they were attacked, not by dive bombers but by Zeros. The agile Japanese dived down around a cloud, climbed up to take the P-400's from behind and below. They numbered about 20. The P-400's had started turning into a Lufbery in which there were more Zeros than P-400's when the Grummans dived and the melee became general. The astonishing Zeros were making almost square turns and the Army pilots found the only way to shake them was to head down for a cloud, make a turn on instruments, and come out on top, ready for a pass.

Below, the weather over the sea had closed down to 1,000 feet and quarter-mile visibility, and consequently the four-plane patrol started back. Coming out of a rain squall, the P-400's were attacked by a half-dozen Zeros and their formation torn apart. Two of the pilots, Lts. R. E. Wythes and R. E. Chilson, did not return.

Altogether four P-400's were lost, two pilots later making their way to Henderson on foot, after bailing out. Five of the seven returning planes were out of commission by reason of bullet holes. Against these losses, the 67th was credited with four kills. The Marines got 14.

That did not end the day's activities. At 1500, 17 F4F's and a dozen SBD's, with two escorting B-17's, arrived at Guadalcanal. Thirty minutes later, with 18 planes on Henderson, the Japanese dive bombers arrived. Ignoring the tempting array on the air strip, they caught the destroyer *Blue* a half mile offshore and sank her. Across at Tulagi, the transport *Burrows* ran aground and, to add to the commotion, nature intervened around 1615 with two earthquakes. That evening the Tokyo Express ran again, giving Henderson a shelling. Through all this, after but 4 days of operations at full strength, only three of the original 14 P-400's survived in commission on 1 September.

The air battle of 30 August proved that the P-400's on Guadalcanal could not be used as interceptors. In addition to the planes shot down, six returned to Henderson that afternoon riddled beyond repair. The 67th had early been aware of the limitations of its planes and the reports of the action of the 30th convinced General Harmon.



Henderson Field Area.

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No Army or Marine aircraft then extant was entirely satisfactory against the Zero, but the P–400's possessed a peculiar disadvantage in that they were unable to reach the altitude customarily employed by enemy bombers. Rate of climb was low, wing load excessive, and the engine extremely vulnerable to hits in the glycol cooling system.

The P–400 had been flown under far from optimum conditions, but its pilots were skilled and courageous, as Major Smith, commanding VMF–223, later testified. General Harmon immediately asked Washington for P–38 and P–47 squadrons, or the P–40 with the Rolls-Royce Merlin engine. Meanwhile, since the P–39 type was his mainstay in the theater, the General cast about for ways of improving its performance. He considered that since .50-caliber bullets neatly disintegrated the Zeros, the 37-millimeter nose cannon in the P–39 could be replaced by either a .50-caliber machine gun or a 20-millimeter cannon. This would have the effect of lightening the plane.

Washington showed equal concern over the record of the 67th and the specific dictum of General Vandegrift that the P–400 was "entirely unsuitable" for operations on Guadalcanal. But the war had to be fought with weapons presently available and considerable numbers of P–39's were on their way to Pacific theaters. The recommended solution was stripping the fighter to lighten it. By the end of September, the P–39K minus 650 pounds of its original equipment had achieved a service ceiling of 27,000 feet, and the Bell aircraft's performance against the Japanese eventually reached heights far above that of the old P–400's—the "klunkers," as the 67th dubbed them.

The P-400 as an Attack Plane

Meantime General Vandegrift at Guadalcanal faced the immediate problem—he had the undesirable aircraft on hand and had to find a use for it. The planes possessed good defensive armor plate and armament consisting of a 20-millimeter cannon, two .50-caliber and four .30-caliber machine guns; they could each carry one bomb and their engines operated reasonably well at low altitudes. The Japanese, moreover, had shown no extraordinary talent with flak. As an attack plane, then, the P–400 could use its bomb on shipping and shore installations, its 20-millimeter cannon on landing barges, and its machine guns on enemy personnel.

About 20 miles east of Henderson, the Japanese held the native village of Tasimboko in some strength. The Marines planned to bring fresh troops from Tulagi, effect a landing east of Tasimboko, strike the position from the rear, and retire the same day. In preparation for this operation, the P-400's tried their wings in a new employment.

On the night of 1 September, two enemy transports and two destroyers lay off Tasimboko discharging troops. Foul weather having prevented the SBD's from interfering during darkness, Captain Brannon with five P-400's took off at 0600 to attack landing parties in the area. None were found, but five beached landing craft were sighted. At 0800 four more Army fighters took off; they dropped 500-pound bombs on the village and strafed both the landing craft and the village. Back on Henderson, Tojo Time was imminent and rather than sit out the attack, the P-400's returned to Tasimboko. In their absence 18 bombers, escorted by 21 Zeros, came over Henderson. The F4F-4's reduced their number by three bombers and four fighters, but the P-400's returned to a cratered runway, a burned-out hangar, three fired SBD's, burning gas and ammunition dumps, and a good many delayed-action bombs.

Such expeditions became routine with the 67th, which began to be known as the "Jagdstaffel." The mechanics could always produce a pair of "klunkers" to go out and work over the Japs. At first, the pilots chose their own targets—landing barges or supply dumps. Later they were sent out to bomb and strafe in the inlets and coves of Santa Isabel, where the enemy maintained jumping-off points for reinforcing Guadalcanal, and their bombing eventually became so accurate they could be assigned targets quite close to the Marine lines.

Day by day the P-400's went up to Tasimboko while the Japanese bombed or shelled Henderson. On 4 September, with only three Army aircraft in commission and 13 pilots to fly them, word was received that the enemy was putting men ashore in landing barges up on Santa Isabel, 75 miles northwest of Henderson. Led by Maj. Robert E. Galer in his F4F-4, the three P-400's were on their way by 1440; the target was easily located in a small cove. Six loaded landing craft were destroyed by two direct hits with 500-pounders and the boats and men still landing were thoroughly strafed. Altogether a total of 25 landing craft out of 30 seen in the area were claimed destroyed. That night, however, the Japanese retaliated with the Express, a light cruiser and two destroyers sinking the American destroyer-transports *Little* and *Gregory* off Savo.

On the 5th, after all personnel on Henderson had undergone a dismal night of enemy shelling, the Jagdstaffel and the Grummans uncovered a prime target—15 fully loaded landing barges about 500 yards off the northwest coast of Guadalcanal. Six Grummans and two P-400's strafed until ammunition was exhausted. An Army pilot may have had this mission in mind when he came back to report that he and his wingman had literally cut a bloody X on the water through which Japanese troops were wading towards land. Two hours later, two P-400's returned to destroy most of the supplies in the landing craft which had grounded on a reef close inshore.

The Tasimboko operation—or, rather, raid—occurred on 8 September. Beginning at 0700, four P-400's and three SBD's bombed the area for 10 minutes, with the object of pinning down the defenders while the assault party went ashore. At 0900 the mission was repeated. At noon help was again requested, the Marines having tackled a rather larger force than had been anticipated, and the P-400's responded at once. Nevertheless, at 1530 the Marines asked that the P-400's cover their withdrawal.

Meanwhile, intermittent thundershowers had made 6-inch mud of Henderson's runway. Three of the P-400's were in commission and the pilots taxied them out. Captain Brannon lowered half flaps, held the brakes, and gave his engine full throttle. The plane crept forward. He wrestled it down the runway and staggered off. Less fortunate, Lt. V. L. Head lurched and skidded trying to pick up speed, muddy spray drenching the plane as it plowed through pools of water. Torque almost pulled it off the strip. Realizing he was running out of runway, the pilot tried to "hang it on the prop." The old P-400 stalled and hit, broke in three, and caught fire. Lieutenant Head was able to get out, though badly burned.

The third pilot took off through the flame and smoke. For 2 hours this lone pair of Army flyers covered the Marine withdrawal, doing lazy eights over the beach while the boats were loaded and launched. When the last had got away, the P-400's came in on reserve gas and somehow in the twilight got down on the strip.

By the time the Tasimboko raiders had returned, the Japanese were ready for a major attempt on the Marine positions. Their Express had been running regularly; their strength had been built to a peak. The Marine air establishment at Henderson was being whittled by operational losses and the necessity of daily interception. On 9 September, the F4F-4's were down to 11.

Lunga Ridge

In anticipation of enemy thrusts, Marine air strength was substantially augmented on 11 September and additional planes came in on the 13th. By the 12th the Japanese had prepared a formidable push against the perimeter defense of the airfield. Bombers hit at Henderson by day and cruisers and destroyers from the Express shelled it by night. A particularly heavy shelling occurred during the night of the 13th, supporting a three-pronged assault on the Marines. Two of the attacks were held, but the most vicious struck at the Lunga Ridge just south of the airfield, a position held by Col. Merritt A. Edson's First Raider Battalion. All night the Japanese drove against the ridge. Colonel Edson's men were forced off the crest and down on the other side. Only the inner perimeter defense stood between the air strip and the enemy. Snipers broke through and the field was brought under mortar and artillery fire. Radio Tokyo announced that Guadalcanal was retaken.

The 67th mustered three of its P-400's to aid the Marine counterattack on the 14th. At 0730 Captain Thompson and Lts. B. W. Brown and B. E. Davis were dispatched to "Bloody Ridge." They did not have to fly to an objective; they simply circled the field, visible at all times to their ground crews except when they dipped behind the low hill. Then the murderous chatter of their armament could be heard. They made repeated passes until enemy rifle and machine-gun fire forced two of them down in dead-stick landings; the last simply ran out of ammunition. The Marines retook the hill and buried the enemy dead with a bulldozer.

It was clear that the Japanese had shot their bolt in the night attack of the 13th. The American lodgment on Guadalcanal had survived another push.

By now, the maligned P-400 had proved itself. General Vandegrift consistently used the plane against any position blocking his Marines--

in fact, he even asked for more P-400's. COMAIRSOPAC's chief of staff, Capt. Matt Gardner, testified to its effectiveness in strafing troops and landing barges. The Marines preferred to use their SBD's against the reinforcing vessels. The P-400 had found in ground-air cooperation its niche on Guadalcanal.

In definance of technical orders, the 67th developed its own technique of dive bombing. On the plane's instrument panel was the warning: "Do not release bomb when nose angle 30 degrees up or down or when airspeed exceeds 280 m.p.h." The Jagdstaffel discovered that the bomb would release at 70° and clear the propeller arc if a quick pressure on the stick was employed to pull the airplane away from the falling bomb. Dives averaged 300 and sometimes reached 500 m. p. h. Unlike the SBD's, which pushed over at 15,000 to 17,000 feet, the P-400's started their dives at 5,000, released and pulled out right over the jungle, zig-zagging over the palms to avoid ground fire and returning to strafe where the latter revealed troop positions.

The cover offered by the jungle and coconut groves effectively concealed the Japanese and distressed the Jagdstaffel, which often could not find the target or believe it had caused damage. Marine outposts reported enemy concentrations, which were shown the pilots on a map and indicated by panels in American-held territory. The P-400's dive-bombed the spot and came back to strafe blindly among the trees. Only occasionally did they catch a fleeting glimpse of a Japanese. However, the infantry, moving in, found bodies in abundance and sometimes silenced mortars, and captured diaries testified to the Japanese trooper's great fear of the "long-nosed American planes." The Marine and Navy intelligence officers who briefed and interrogated the 67th employed this evidence to encourage the Army pilots, and the Jagdstaffel took heart.

Henderson's Combat Routine

The routine of combat at Henderson Field began around noon. Enemy bombers would arrive, 18 to 24 strong, high in the sun in a perfect V of V's, escorted by 20 or more Zeros in flights of three. Coming down from Kahili or Buka fields, the formation would bend its course around the islands to avoid being spotted. Some 150 miles out of Henderson it would reach altitude, then come in fast—perhaps as fast as 250 m. p. h.

As the warning came through, a captured Rising Sun flag, the signal to scramble, would shoot up at the pagoda. Every flyable aircraft would head through the craters for the runway. If the crews noticed a wind drop amid the dust, they knew the plane had run afoul of a dud hole or a small crater hidden in the tall grass. First planes on the runway took off first, two at a time—SBD's or P-400's. Once aloft, the Grummans, test-firing, would climb for altitude while the SBD's and P-400's flew off to work over Japanese territory. The ground crews worked until the black flag went up; then they'd hit the foxholes.

The 67th's ground crews shared the Marines' hardships on Guadalcanal, even voluntarily manning the forward foxholes on nights when a break-through seemed imminent. There were not enough of them for the job; they had few tools, no hoist equipment, no new parts. Only seven armorers had accompanied the original 14 planes. Refueling in particular was a back-breaking job. Crew chiefs regularly slept under the P-400's—in case individual Japanese were able to slip through the Marine lines. Nothing but combat matériel had accompanied the first flights to Guadalcanal.

After their repulse on Lunga Ridge, the Japanese evidently retired to give the Guadalcanal problem some thought. The elements of their solution, however, did not at once differ importantly from the familiar pattern. The Tokyo Express still ran and air raids on Henderson continued, as did the knife work in the bush and the activities of "Maytag Mike." It was clear that decisive naval actions and the landing of heavy reinforcements were necessary to secure the Guadalcanal-Tulagi area. These were in the offing, but not immediately. The Marines, reinforced by a large convoy on 18 September, made their preparations. The 11th Group on Espiritu and the 67th at Henderson carried on.

The October Crisis

IN RESTROSPECT October was the crucial month in the Solomons. Though initially surprised, the Japanese had reacted vigorously to the American thrust. To begin with, off Savo Island their guns uncovered the Marine lodgments. Next, to exploit this advantage, they dispatched in late August a powerful task force which the

Navy turned back in the Battle of the Eastern Solomons. The Japanese gradually built up strength which they expended at Lunga Ridge in mid-September. October saw the near-triumph of their tactics; they all but broke the American forces on Guadalcanal.

On 26 September, when the correspondent Richard Tregaskis departed Guadalcanal, he first went north to Bougainville in an Army B–17. The plane probably belonged to Colonel Saunders' 11th Group, although a new squadron, the 72d of the 5th Group, had recently arrived in the area. Tregaskis furnished a good description of a routine B–17 search mission.

The Fort he was in left Guadalcanal towards dawn and headed over Tulagi Bay for the northwest. The navigator, explaining that no excitement was imminently likely, took off his shirt to acquire a tan. Not until the plane turned on a Bougainville bearing was the first enemy aircraft seen. Two Zeros made a tentative pass. Later an enemy cargo ship went into violent maneuvers as the Fort approached. A float Zero got too close and the .50-caliber sent her down for a dead-stick landing. Meanwhile, the navigator counted and identified the ships below and the bombardier decided that the flak which thwacked against the fuselage was from naval guns. Another Zero made a single frontal attack on the Fortress without either aircraft sustaining damage. The rest of the journey back to Espiritu was without incident.

Throughout September and October, such missions were the principal occupation of Colonel Saunders' command, in order to keep COMSOPAC informed of enemy surface movements. Statistics of operations for those months reveal twice as many search as bombing sorties. From Espiritu Santo the sectors fanned northwesterly in narrow arcs of 6° each and extended approximately 800 miles with a 100-mile width at the extremity. The maximum coverage included Rekata Bay on Santa Isabel and Gizo Bay in the New Georgia group. When possible to stage through Henderson, the range increased—to the Buin-Shortland-Faisi area—where the bombers could keep an eye on freight moving down from Rabaul or the Mandates. These were long flights, averaging more than 1,500 miles—12 weary hours for the crews.

Occasionally, the Forts went even farther—to Kieta on Bougainville's eastern shore and then around to touch the Buka Passage. On such lengthy missions it was not always possible to carry bombs, but extra fuel and reduced bomb loads were the rule. Targets abounded—at Bougainville's lower tip, where the harbor of Tonolei and Buin settlement lay behind densely wooded Shortland Island, and in The Slot, funneling down to Guadalcanal between the New Georgia group and Santa Isabel and Choiseul to the east. Tonolei, protected by Kahili Field, received shipping from Rabaul, Palau, and Truk, while sightings in The Slot included every category in the Japanese Navy.

Destroyers Hard to Hit

Unfortunately, it was not easy to hit shipping. Destroyers were most numerous in The Slot, but they were extremely maneuverable and almost defied direct hits. The slower cargo vessels, offering easier targets, were nevertheless far from sitting ducks for a single search plane. Infrequently, a task force was sighted—battleships, cruisers, and escorts—and on 14 September, 250 miles north of the Santa Cruz group, seven B–17's uncovered such a force—three battleships, four heavy cruisers, and a number of lighter craft moving to the northwest. Through intense and accurate flak, two possible hits were claimed.

Weather remained a formidable enemy, aborting a strike on 11 September by seven Forts against a sizeable naval force at Tonolei and again turning back 15 B–17's tracking a carrier reported northeast of the Santa Cruz group. In this last search three Forts crash-landed at sea. Two of the crews reached the northern tip of New Caledonia and were later rescued. The third drifted 7 days at sea, lost two of its members to exposure, was finally rescued by the Navy.

By 20 September, the 11th Group had sighted 155 vessels of all types during 7 weeks of operation. It had bombed 19 and hit 4. Of these, 2 were sunk. The scale of attack was always light; 1 attack by 4 planes; 4 by 3; 4 by 2; and 10 by single search planes.

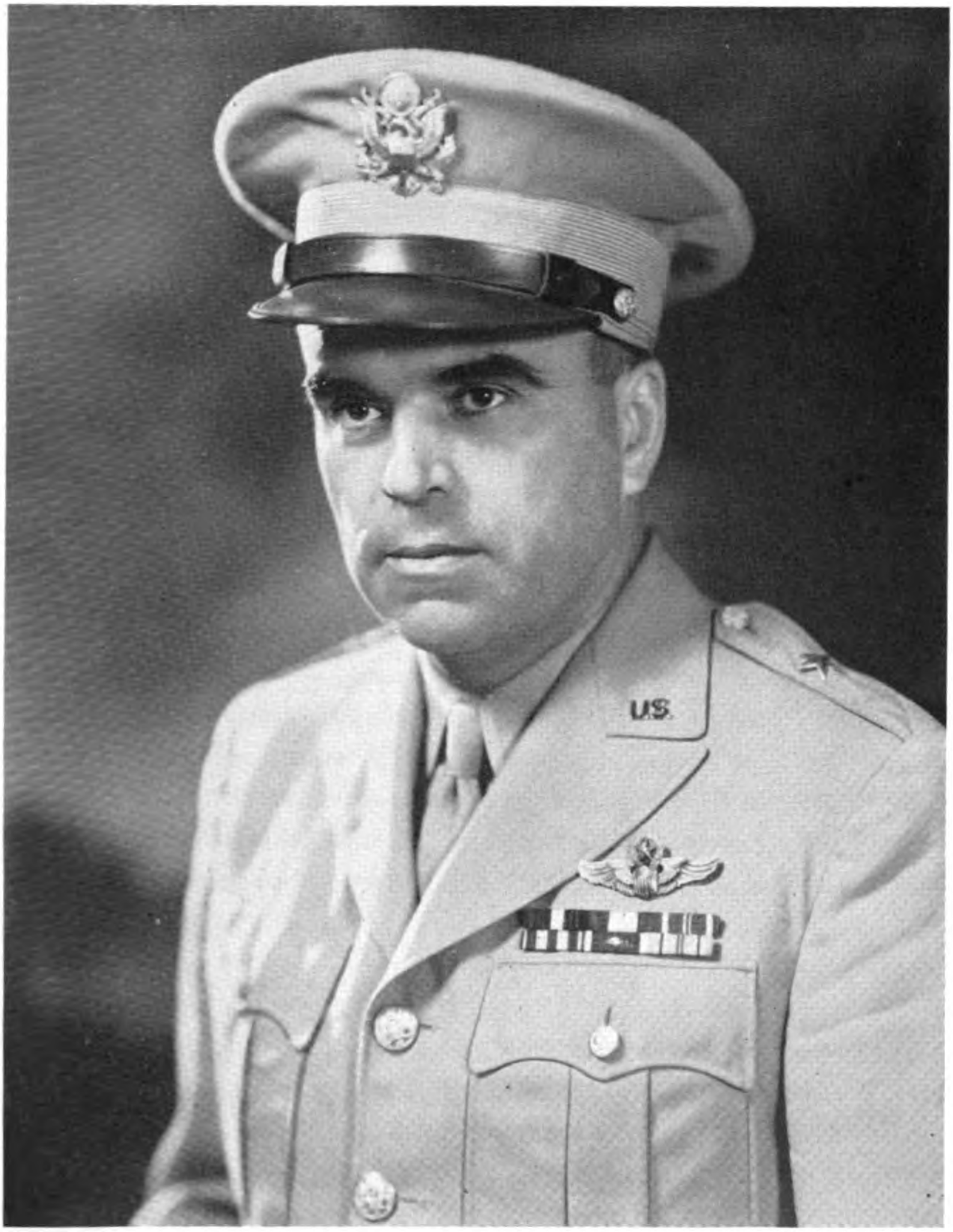
To increase the striking power of the B–17's, another squadron was dispatched from Hawaii in mid-September. Necessary maintenance personnel moved out of Oahu on the 21st in LB–30's—early versions of the Liberator. By 23 September the B–17E's of the 5th Group's 72d Squadron had arrived in Espiritu and on the 24th some of them were already up over Shortland Island. In mid-October, two additional squadrons of the 5th Group were dispatched to the South Pacific. For all practical purposes, the 5th's squadrons operated as part of the 11th, an arrangement recognized in December by the establishment of a joint headquarters for the two groups.

"Eager" was the adjective for the pilots of the 11th, who showed a reckless tendency to use the big bombers as attack planes. The gunners were fond of strafing and the pilots obligingly took the B–17's down over the ground and dock installations at Gizo or over the float planes and flying boats at Rekata Bay. On 16 September, five separate strafing attacks were run over Rekata Bay and 3 days later the docks at Gizo were treated similarly. Such employment of heavy bombers disturbed General Harmon and he informed headquarters that he was putting a curb to such activities.

The over-all tactical situation at Guadalcanal determined, that is, limited, the effectiveness of General Harmon's heavy bombers. Although a Fort had come in to stay overnight as early as 25 August, Henderson was never stocked with enough fuel to permit continuous operations by B–17's. It was not stocked with fuel because the enemy controlled the waters of the Lower Solomons. The Tokyo Express ran often, fast, and in considerable strength. One way to hamper the Express was to hit hard at Tonolei and Buka, but the gas for these missions had to be picked up at Henderson, and Henderson ordinarily lacked it, until after the middle of November.

Moreover, the field, shelled almost nightly and bombed almost daily, was too exposed for heavy bombers and suffered as well from lack of service personnel. During the first 3 months of the campaign the Marines cheerfully took on a great part of the burden of servicing the B–17's which came in from time to time. By October Henderson had its Marston mat, but General Harmon doubted that the field could support heavy-bomber operations. Taxiways and hard standings were lacking, dispersion was poor, and rain was likely to bring operations to a soggy halt.

Nevertheless, in the first part of October, an attempt was made to restrict the use of Buka, which the Japanese employed as an advanced staging point for Rabaul-based bombers. As early as 2 September, 40 bombers and fighters had been reported on the field. On 4 October, only one B–17 could bore through the weather to drop a score



Official Photo USAAF

Brig. Gen. LaVerne G. Saunders, former commanding officer of the 11th Bombardment Group (H).

of 100-pounders on the strip and parkways. Eight days later, another mission hit the field more solidly; the bombs splashed along the runway and 10 parked aircraft were assessed as destroyed. Only two Zeros rose from the surprised airdrome and only one got back. On the 13th 6 more Forts repeated the mission, putting 6 tons on the Buka strip. The day when the Guadalcanal gas supply could back up a sustained offensive still lay in the future.

During late September and early October, the Japanese continued to run the Express, filtering reinforcements into Guadalcanal at a low but steady rate. Marine air at Henderson enjoyed only limited success in coping with it. The Express did not get within range until late afternoon; ordinarily only one strike could be accomplished before nightfall and weather often interfered, but whenever moon and clouds permitted, the dive and torpedo bombers roared out for night attacks. Back at Espiritu, Colonel Saunders found himself at a more serious disadvantage; by the time his B-17's could cover the distance to Guadalcanal, the Express would be out of range and dispersed up The Slot.

On 5 October, another method of derailing the Express was tried. The *Hornet* was dispatched to the north of the Solomons chain. Her aircraft struck at Kieta and depots in the Shortland area, and at Faisi hit hard at a naval force preparing for a southward voyage. Still that night the Express made its run, and on succeeding nights as well. But on 11 October it met disaster at the other end of the line.

Cape Esperance

Army reinforcements were moving up to Guadalcanal in the second week of October. Partly to cover the flank of this convoy, but expressly to seek battle with Japanese units on the Guadalcanal run, a task force under Rear Adm. Norman Scott went hunting in the Solomons. The eyes of this force were the B-17's covering Bougainville's southern tip.

Current search routine of the B-17's was roughly as follows. Four planes departed daily from Espiritu and Henderson Field. Those from Espiritu took off at 0500, searched 1,000 miles between 294° and 324°, then landed at Henderson. Next morning, out of Guadalcanal, these same Forts covered an arc 450 miles deep between 300° and 340°,

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flying to within 50 miles of Rabaul. Weather permitting, this was efficient coverage. To hinder such activity, the Japanese brought a fresh and highly trained fighter unit into the Shortland area. On occasion, the B–17's went farther afield, on 2 October to Kapingamarangi (Greenwich) Island, where photos were taken and the area strafed.

On 11 October, Admiral Scott's cruiser force, *San Francisco, Salt Lake City, Helena,* and *Boise,* two heavies and two lights, with attendant destroyers, cruised off Rennell Island, out of range of Japanese air search but within 5 hours' steaming of Savo. At 1345, Henderson reported search planes had discovered two cruisers and six destroyers southbound down The Slot. Further information on Japanese naval movement was denied by intensive air raids on Henderson during the afternoon. Calculating that the enemy should be off Savo an hour before midnight, Admiral Scott bore north, expecting to meet only the force reported during the early afternoon. Although the enemy's armada proved considerably more substantial, that fact served only to increase Jap losses in the night action which succeeded. The Battle of Cape Esperance cost the Imperial Navy two heavy cruisers, one light cruiser, five destroyers, and an auxiliary; another heavy cruiser and various destroyers were damaged. Our own losses were 175 killed and a number wounded. The destroyer *Duncan* was lost.

Cape Esperance not only failed to stop the Express; it hardly gave it pause. However, 4,000 U. S. Army troops of Maj. Gen. Alexander M. Patch's Americal Division were subsequently put ashore in time to face the Japanese fury, which thenceforth increased in scale and effectiveness. The enemy was working up to another big push. He began by virtually knocking out the Guadalcanal airdrome.

At Henderson, the 67th Fighter Squadron had been continuing its strafing and bombing. New pilots had arrived; most of the original group were dead or back in the rear areas. New planes—P–39D–1's and P–39K's—were coming in, being assembled, tested, and flown up to Guadalcanal—just as the old P–400's had made the journey in August.

The 9th of October was a routine day. The field was muddy. Six P–400's were scheduled for a mission against the Kokumbona area to the west. Taxiing in the mud, one P–400 broke off a nose wheel;

another sustained two flat tires; a third simply got stuck. Still another plane proved to have a rough engine. The remaining P–400's bombed and strafed for an hour near a bridge west of Kokumbona and at 1100 four pilots returned to bomb. The enemy air raid at Tojo Time failed to materialize. Earlier in the day, the new P–39's had made their debut up in the New Georgia area, accompanying SBD's in an attack on Japanese ships. Of the float planes sent up to interfere, the P–39's shot down one certain and two probables without loss to themselves. Late in the afternoon, the P–39's, using 100-pound incendiaries and demolition bombs, worked over the Marovovo district beyond Cape Esperance.

In the succeeding 3 days the pattern was largely repeated. On the 10th, the P–39's went twice up to the New Georgia area as escort for SBD's on ship strikes. On the 11th, the 67th lost one pilot and was credited with 1 bomber in a scrap with 30 bombers and 20 Zeros carrying out the usual noon-hour raid. On the 12th, ground troops were again harassed; the P–39's flew top cover for TBF's and SBD's which went up after 3 destroyers in The Slot; and 2 P–39's cracked up in take-offs from the muddy field. On this day, however, a new note was added: a Japanese field piece began dropping shells in the dispersal area.

Henderson Field Knocked Out

Admiral Scott had chastened the Express on the night of the 11th. Colonel Saunders' B–17's, returning from Buka on the 13th, stopped over at Tonolei long enough to score a direct hit on a transport and shoot down 6 of 26 attacking fighters. The Americal Division's 164th Infantry was disembarking at Lunga Point.

The morning of the 13th the 67th attacked landing barges which the enemy had beached during the night at the western end of Guadalcanal. At noon the air raid came. The Bettys were scarcely intercepted. The P–400's watched the show above from 12,000 feet; the P–39's struggled to 27,000 and still were 3,000 feet low; and insufficient warning prevented the F4F's from making contact in force. At 1400, while the fighters sat being refueled and rearmed, another wave of Japanese bombers made an appearance and was able to bomb at will, damaging aircraft at Henderson and causing casualties among the 164th Infantry, still moving ashore.

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More serious, the Japanese field piece had again begun to lob shells—this time into the area around the end of the runway. The Seabees of the 6th Battalion had been racing up and down the strip with pre-cut Marston mat and preloaded dump trucks prepared for the expected craters, but their efforts had barely kept the field in operation. Pilots and mechanics were crawling from their foxholes to ready the P-400's for another mission—to track down "Pistol Pete," as the gun had already been named. Suddenly the mission was called off—no gas!

Just before midnight came the main event. First the noise of a small plane overhead. Then three flares, a red one for the west end of the runway, green for the east, and white in the center. The men were scarcely in the foxholes when bedlam broke loose. Off Guadalcanal stood an Express consisting of 2 battleships, 1 light cruiser, and 8 destroyers. For over 2 hours the bombardment continued. Runway and dispersal area were brought under fire; after a thorough pattern shelling, the enemy shifted to the camp sites in the palm grove. Gas and ammunition dumps took hits and all over the field aircraft went up in smoke and flame. For whole minutes the area was bright as day from the flares.

The Japanese let up long enough to cool their guns, then it began again. At 0315, the Express stood for home. Three bombers came overhead and dropped their sticks; then three more; and so on until dawn.

The morning of the 14th lit up a shambles. Tents were collapsed or shrapnel-riddled. The aerial defenses were seriously reduced; in all, 57 aircraft had been destroyed or damaged. To meet the Express, four SBD's remained, but no TBF's; to meet the Tojo Time raid, only a few Wildcats. The 67th had been fortunate—two P-39's damaged and none of the P-400's even hit. A few barrels of aviation gas remained. On the 13th Colonel Saunders' B-17's had been bombing over Buka and Tonolei, had returned to Henderson, where two of the Forts were so sieved that night by shrapnel that they had to be abandoned.

In the midst of the post-raid rubble and confusion, Colonel Saunders led out his remaining B-17's. Less than 2,000 feet of Henderson's runway was usable, but the bombers took off for Espiritu in 1,800 feet, drawing 70 inches of pressure without a cylinder blowing out.

On instructions from Marine headquarters, officers of the 67th went through the two derelict B–17's, destroying radios, maps, charts, and confidential papers, and hiding the Norden sights. For the time Henderson was useless as a heavy bombardment base.

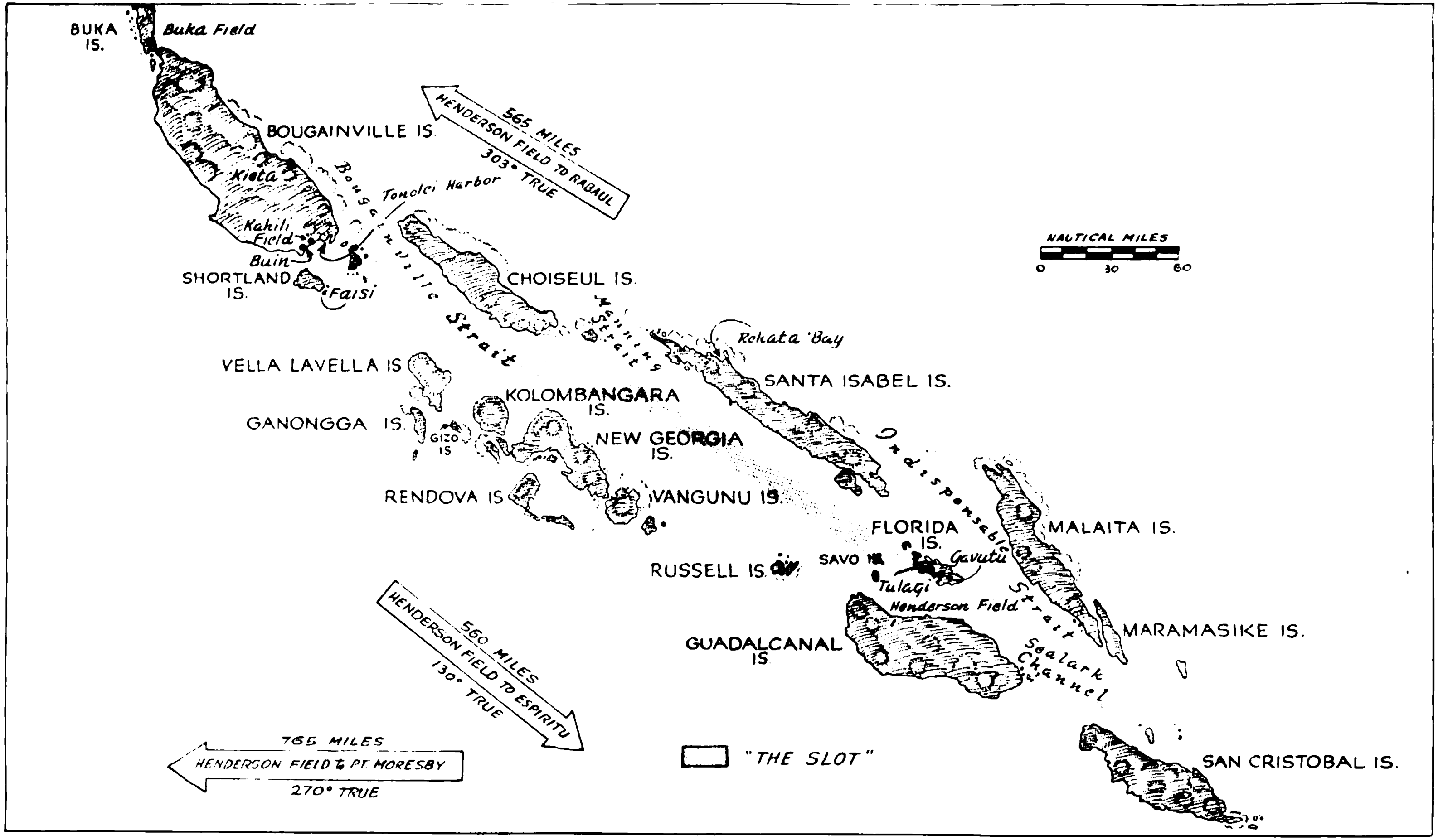
In fact, Henderson was very nearly useless for any type of aircraft. Pistol Pete—actually a number of guns—went into action again. His range, short at first, improved with practice, most of the shells landing in the area where the 67th's planes were parked. They came irregularly, about two every quarter-hour. As fast as the Seabees tackled a crater, another shell would whine over and dig at the same spot, scattering men and equipment. Still the Seabees tamped, filled, and laid mat, and for a time kept part of the field in operation. Providentially, back in September, they had laid out a grass strip 2,000 yards distant from and parallel with Henderson; although rough and short, this strip supported the light planes during the critical mid-October days.

In an effort to silence Pete, four P–400's were hung with 100-pound bombs. The pilots, parachutes strapped on, crouched in nearby foxholes. One at a time, between the bursts, they ran for their planes. Drunkenly, they taxied out, careened down the runway with new craters pocking the surface behind them. All got off but failed to silence Pistol Pete, who was numerous, concealed, and frequently moved. Lack of fuel precluded further raids against him; every drop was saved for fighter defense.

Enemy pressure was relentless. At 1154 and again at 1303, enemy bombers and fighters struck, without warning or interception. Bomb craters could be filled, but the Seabees fell behind in their race with Pete. By afternoon of the 14th Henderson Field was knocked out. Down from headquarters, shortly after noon, came a Marine colonel. His words were reminiscent of the Philippines:

> We don't know whether we'll be able to hold the field or not. There's a Japanese task force of destroyers, cruisers, and troop transports headed our way. We have enough gasoline left for one mission against them. Load your airplanes with bombs and go out with the dive bombers and hit them. After the gas is gone we'll have to let the ground troops take over. Then your officers and men will attach yourselves to some infantry outfit. Good luck and good-bye.

At 1425, then, 4 P–39's, each with a 300-pound bomb, and 3 old P–400's with 100-pounders took off with the 4 SBD's. Henderson had few teeth left to show the Express. One hundred and fifty miles


BUKA IS.
Buka Field
BOUGAINVILLE IS.
Kieta
Kahili Field
Buin
SHORTLAND IS.
Faisi
Tonolei Harbor
Bougainville Strait
565 MILES
HENDERSON FIELD TO RABAUL
303° TRUE
CHOISEUL IS.
Manning Strait
Rokata Bay
SANTA ISABEL IS.
NAUTICAL MILES
0
30
60
VELLA LAVELLA IS.
KOLOMBANGARA IS.
GANONGGA IS.
GIZO IS.
NEW GEORGIA IS.
RENDOVA IS.
VANGUNU IS.
Indispensable Strait
FLORIDA IS.
MALAITA IS.
RUSSELL IS.
SAVO IS.
Gavutu
Tulagi
Henderson Field
MARAMASIKE IS.
GUADALCANAL IS.
Sealark Channel
560 MILES
HENDERSON FIELD TO ESPIRITU
130° TRUE
765 MILES
HENDERSON FIELD TO PT. MORESBY
270° TRUE
"THE SLOT"
SAN CRISTOBAL IS.

The "Slot."

of precious fuel was burned before the planes sighted the Japanese task force off the coast of Santa Isabel—6 transports in line astern, well screened by 8 destroyers and cruisers, 4 on each flank. The armada maneuvered violently, threw up heavy flak. The composite attack group pushed over and went down. No planes were lost—but no hits were seen.

Someone recalled the abandoned B–17's. The gas siphoned out of their tanks proved enough for one more strike, and for this one old P–400, saddled with 500-pound bombs, barely wobbled off the runway. This time the SBD's scored two hits on the Japanese force, by now at the near tip of Santa Isabel. The 67th lost one plane over the target, and another to a night-landing crash back at Henderson.

It was a glum prospect as darkness set in over the Marine beachhead. Another shelling was a certainty. The enemy ships were anchored between Kokumbona and Tassafaronga, only 10 miles down the channel, busily unloading troops and supplies—a prime target for an air strike, but no gas. However, the shelling which started at 0100, though heavy, lasted but a short time, newly arrived PT boats out in "Sleepless Lagoon" contributing to the premature withdrawal of the Express. And gasoline was on the way.

By mid-morning it began to arrive, ferried in by the work-horse C–47's. For over a week Henderson was to depend on the fuel brought in by this service, maintained by two Marine transport squadrons and the AAF's 13th Troop Carrier Squadron. All day long on the 15th the transports came in from Espiritu, each with about 12 drums—enough to keep 12 planes in the air for 1 hour. They braked to a skidding stop, the drums were rolled out, and the planes took off before Pistol Pete could lob a shell.

Henderson Strikes Back

With gas on hand, Henderson prepared to hit back. Battered planes were patched, pilots belted their own ammunition, armament crews shouldered the formidable task of bombing up the planes without bomb carts. Ten men hoisted a 500-pound bomb on a truck bed. Hauled to the vicinity of the plane, then rolled through the mud, the bombs were lifted and fitted into the racks by as many men as could crowd under the aircraft's belly. All this on empty stomachs—with the cooks in the foxholes, it had been hardtack and cold hash since the 13th.

Down the beach were numerous targets. Between Kokumbona and Doma Reef, five transports and eight destroyers were pouring ashore upwards of 10,000 troops. No infiltration this, but invasion in force, with a constant patrol of Zeros over the ships. All day on the 15th, the Henderson aircraft smashed at the convoy.

No sooner were the planes airborne than objectives were visible, and waiting Zeros swept down on the Army and Marine planes starting their dives. The destroyers contributed heavy flak. In this situation, the technique of the P-39's and P-400's shaped up somewhat as follows: they tried to disregard enemy fighters, dived, released when the ship was dead center in the gun sight, pulled out over the mast, and zigzagged out of the ack-ack. Then to Henderson for another load.

Results were encouraging. One of the 67th's pilots got a probable, two other scored hits which damaged two transports; still another dropped on a transport which caught fire, exploded, and sank. The air score was even—one Zero for one pilot of the 67th. Altogether the fighter squadron sent three missions up the beach on the 15th, and in addition weathered the usual high-level Tojo Time raid.

The Forts also had a hand in the battle. On the 14th, six had come up from Espiritu to pound the Express, but lost it in the darkness of Indispensable Strait. On the 15th, 11 of them, now back, possibly damaged a transport and fired what was thought to be a light cruiser. Of the 20 Zeros covering the landing operation, the bombers knocked down nearly half, and though many sustained major damage, all the Forts made the 640 miles back to Espiritu.

The night of the 15th Henderson Field absorbed a shelling by a cruiser, but in the morning the enemy task force had left. Three of its transports lay blazing hulks on the beach, but troops, armament, and supplies had gone ashore. Harassment of these reinforcements became a principal mission of the Henderson-based aircraft. As often as they could be refueled and rearmed, P-39's, P-400's, and SBD's went down to Kokumbona. The F4F-4's made the daily Japanese raids a costly business; on the 23d, for instance, 24 Grummans, intercepting 16 bombers and 25 fighters, shot down 20 Zeros and 2 bombers with no losses.

These days, prelude to a big enemy push, were utter weariness to the 67th. Repeated missions multiplied the work of men forced by repeated bombings and shellings to spend most of their time in foxholes. Sleep and sufficient food were always lacking. Planes were wearing out. One day, four P-400's took the air. The first had a bomb, but only one .30-caliber machine gun functioning; number two had a bomb and no functioning armament, numbers three and four had most of their guns in commission, but no bombs. Personnel cracked under the strain. On the 18th, officers and men, affected by repeated bombings, were evacuated to New Caledonia.

Apparently the Japanese were sanguine of the outcome; their German allies announced that two important airfields had been captured from U. S. forces in the Solomons. In Washington, Secretary Knox hinted at the seriousness of the situation. The main strip at Henderson was only recurrently in operation despite prodigious efforts to erase the pockmarks. Up in the northern Solomons the Japanese marshaled cargo and warships and the Express ran on the nights of the 16th, 18th, and 20th—destroyers and cruisers feeding the units ashore with foreboding regularity. The new COMSOPAC, Adm. William F. Halsey, Jr., soberly prepared to counter a thrust by sea.

The Japs' Grand Assault

Decision, however, was reached on land. The Japanese plan envisaged simultaneous attacks, eastward across the Matanikau and from a point south of the airfield. D-day was 23 October; for days before, patrols probed the American lines. But the grand assault, from the Japanese point of view, was bungled; the attacks were delivered separately, and separately they were beaten back.

The Matanikau action proceeded on schedule, if not according to plan. Ten tanks and thousands of fresh troops, with ample artillery support, were thrown against the defenders. Four times on the 23d the enemy lashed at positions held by the 1st and 2d Battalions of the 5th Marines. American half-tracks mounting 75's knocked out the tanks one by one as they attempted to cross the Matanikau, and the Marines picked off about 2,000 Japanese troops. Undaunted, the enemy repeated the effort at dawn of the 24th. The P-400's went

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over, bombing and strafing the enemy lines, and all through the day recurrent attacks were checked, although heavy afternoon rains grounded the planes at Henderson.

At 0800 on the 25th, the men on Henderson Field were surprised to find five Zeros circling above their strip, making no effort to strafe. Soon this number swelled to 14 and a medium bomber, all awaiting the signal to land, apparently under the impression that the field was in Jap hands. No signal came, and as soon as the mud had dried sufficiently, eight Grummans left the field and shot down the whole force.

The Express had put in an appearance during the early morning. One heavy cruiser, one light cruiser, and four destroyers landed troops and supplies and began to support with shellfire enemy attacks on the embattled beachhead. The SBD's and the 67th went after this force, making four separate attacks. At 1420, Lieutenants Dinn, Purnell, and Jacobsen in P–39's caught the ships northeast of Florida Island, barely missing them with 500-pound bombs. Two hours later, these three and Captain Mitchell attacked once more, Lieutenant Jacobsen putting his bomb squarely on the heavy cruiser. Near misses on the light cruiser were obtained and the warships, trailing oil slicks, moved slowly off.

On the 25th the enemy staged his attack from the south, striking along Lunga Ridge. Although the Marines and the 164th Infantry piled the attackers six deep, a night assault broke through until some enemy elements stood close to the south side of Henderson. The morning or the 26th a desperate American counterattack cleared the field. Three of the old P–400's and two P–39's did their bit, bombing and strafing the area south of the grass fighter strip. The counterattack of the morning of the 26th, as it turned out, ended the Japanese threat by land, but a major sea action was brewing.

In the Japanese plans, possession of Henderson Field was apparently a prerequisite to a grand assault on Guadalcanal. With the strip harboring friendly carrier planes instead of the redoubtable Grummans, SBD's, P–39's, and P–400's, additional troops could be safely brought in for a mop-up. The Japanese fleet, meanwhile, could be expected to see that the American Navy did not interfere. Appreciation of the enemy intentions clarifies the role of the carrier action of 26 October, known as the Battle of Santa Cruz Islands.

Enemy Confident

The success of their land drive on 25 October must have made the capture of Henderson seem only a matter of hours to the Japanese, and down from the Mandates moved a force formidable enough to clinch the argument. Admiral Halsey had scraped his Pacific resources to meet it. The *Enterprise* and the new *South Dakota* were rushed down from Pearl Harbor, where the former had been recovering from wounds received in the Battle of the Eastern Solomons. With the *Hornet,* these two composed the nucleus of the force with which Rear Adm. Thomas C. Kinkaid was skirting the Santa Cruz Islands on 26 October, ready to intercept whatever enemy forces the Mandates might offer.

On that day the search planes—B–17's and PBY's—were out from Espiritu. East of Malaita, Lt. Mario Sesso of the 5th Group located one section of the Japanese force—which mustered four carriers and four battleships, with a wealth of escort, transports, and auxiliaries. During a half-hour's observation Lieutenant Sesso developed his report until it included a battleship, several cruisers, destroyers, and a possible carrier. Seven carrier-borne Nagoya Zeros attempted to interfere. Two fell away smoking and one disintegrated in a frontal attack. The Fortress suffered failure of the lower turret and loss of one gun in the tail, another in the upper turret. The Zeros killed the bombardier, but the Fort came back and the report got through to the fleet.

In the Santa Cruz action, the Japanese, by destroying the *Hornet,* reduced the American carriers in the South Pacific to the again-damaged *Enterprise.* They had sustained damage to two carriers themselves, as well as to a *Kongo* class battleship, but it is unlikely that this punishment prompted their withdrawal. The American troops on Guadalcanal stood fast; Henderson's aircraft could still hit at an occupation force. The Japanese, consistently enough, withdrew. The beachhead actually had saved itself.

The Securing of Guadalcanal

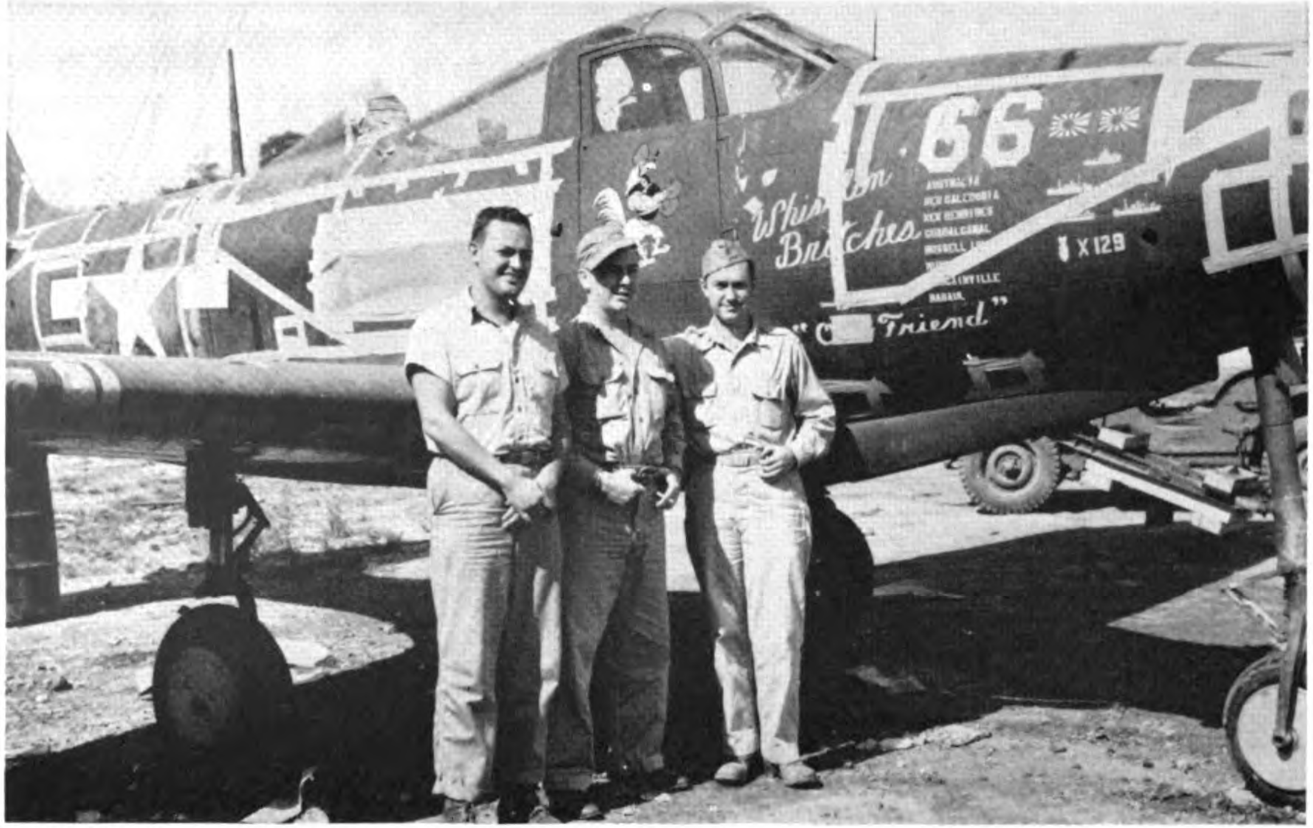
ON one of the last days of October 1942, the U. S. Navy's submarine *Amberjack* slipped cautiously into Tulagi. Her mission, cargo, and passengers were not usual for a submarine, but well attuned to the Solomons campaign, in which almost anything was more than likely to happen. The *Amberjack's* spare fuel tanks carried aviation gasoline—Henderson still suffered from insufficient gas. She carried torpedoes for the Tulagi-based PT boats—Guadalcanal still suffered from the visits of the Express. She carried, in addition, Army Air Forces personnel, 15 airplane mechanics and armorers for the worn 67th Fighter Squadron—which had always suffered from lack of manpower.

After their big push the Japanese had receded somewhat and the situation on Guadalcanal showed some improvement. The Express still ran, although harassed by the two dozen submarines COMSOPAC operated in the area and by the pilots from Henderson, whose two strips had recovered from the ravages of October.

General Vandegrift's Marines celebrated by striking across the Matanikau on 30 October. For a change, American warships, the light cruiser *Atlanta* and four destroyers, stood offshore in support. By 3 November, the Marines were beyond Point Cruz. However, on the night of 2 November, the industrious Japanese landed 1,500 men east of Koli Point and the American push to the west was checked. On 4 November, the *San Francisco, Helena,* and *Sterett* obligingly shelled this force, which because of subsequent attentions by the Marines never seriously threatened American positions.

The 67th was carrying the war to the enemy in its own way. On the 3d of November, for instance, two pilots bombed AAA emplacements at Kokumbona. Two more were up over the hills on reconnaissance, and, since intelligence had reported Japanese troops east of the Tenaru, the afternoon was devoted to bombing and strafing this region. The pilots went out in pairs, dropping 100- and 500-pound bombs, and returning with numerous bullet holes in their craft.

The routine was not light. Usually 4 or 5 missions were run, but on some days the total might rise to 12 or more. As the newer P-39's arrived, they were frequently dispatched to escort Marine strike forces, or as dive bombers in company with the SBD's. One of the missions



VETERAN. The P-400 that went through the entire Guadalcanal campaign is shown here just before it was sent to the United States for display. The officers, reading left to right, are Majors G. W. Phillips, C. E. Allard, and A. W. Price, respectively Intelligence Officer, Adjutant, and Executive Officer of the 67th Fighter Squadron.

of 3 November had the following participants: 15 SBD's, 4 P-39's, 2 P-400's, 1 TBF, and 7 F4F's—all out after the Japanese who had come ashore near Koli Point. Such conglomerations constituted the primary weapon against the Express.

The afternoon of 7 November, 11 southbound Japanese warships were sighted northeast of Santa Isabel and the composite force went into action. Out from Henderson flew 7 SBD's with 1,000-pounders, 3 torpedo-laden TBF's, and 8 P-39's lugging 500-pound bombs, the whole escorted by 22 Wildcats. The Army pilots' instructions specified they were first to bomb the warships, identified as 1 light cruiser and 10 destroyers, pull out, and join the Grummans as high cover. However, the P-39's were held up on the take-off and were overtaking the rest of the formation when they saw 3 float Zeroes and 2 float biplanes about to attack 2 F4F's. Jettisoning their bombs, the P-39's shot down all 5. Ahead, the strike was succeeding. The TBF's put 2 torpedoes into the cruiser and 1 into a destroyer, while the SBD's planted a 1,000-pounder on the cruiser. In the air battle, the enemy lost 15 float planes, the Marines 4 F4F's.

The B-17's continued their searches from Espiritu. Daily six were out, occasionally eight to provide a broader coverage. Air opposition had for the time diminished, but to vary the routine there might be a surfaced sub to strafe or a flight of float Zeros to dispute the passage. So far as bombing was concerned, without the necessary fuel at Henderson the B-17's could not get up to Buin-Tonolei from where the Japanese would mount any further offensive.

Japs Plan Offensive

That the Japanese were contemplating such an offensive was obvious. By 9 November, reports of concentrations began to come in. As of 12 November, when the battle was already under way, estimates put the enemy's strength at two carriers, four battleships, five heavy cruisers, and all the escort and shipping needed for a major attempt on Guadalcanal. Against such a force, Admiral Halsey's resources were slim, his principal units being the apparently indestructible *Enterprise,* under repair, the *Washington,* and the *South Dakota.*

Additional complication was the fact that COMSOPAC was required not only to turn the Japanese thrust but to put Army and Marine reinforcements on Guadalcanal. To aid the Guadalcanal garrison, these reinforcements had to be landed on the island and unloaded before the Japanese boiled down from Buin in any great strength. Moreover, the transports had to be safely removed again. Time was extremely short and the whole operation distinctly ticklish. Fortunately, Admiral Turner, in charge of supplying Guadalcanal, had developed a fairly accurate estimate of the chronology of Japanese moves. The predicted enemy timetable ran somewhat like this: land-based bombing of Henderson starting on 10 November; naval bombardment on the night of the 11th; a carrier air attack on the field on the 12th, with naval bombardment and landings that night. The invasion force was expected on Friday the 13th.

Since the U. S. transports had to clear Guadalcanal by Thursday night, cargo vessels were to be off Lunga Point at dawn of Wednesday, the 11th; transports from Noumea would arrive Thursday morning. The escorts of these groups, combined under Rear Adm. Daniel J. Callaghan, were to deal with any Japanese naval force poking around in Sleepless Lagoon. A great deal depended on the speed of unloading and on the Japanese doing nothing unexpected.

The cargo vessels moved in on schedule and commenced unloading. At 0935, they were attacked and slightly damaged by dive-bombing Aichi 99's, the Marines losing six planes in the fight with bombers and escort. At 1127 the high-level raid occurred; eight of the 67th's pilots were forced to sit this one out at 12,000 while the Marines went up to destroy six of the raiders. That night, Admiral Callaghan swept Savo Sound without incident.

The American transports anchored off Kukum beach at 0530 on Thursday the 12th, screened by cruisers and destroyers. At 1340, on warning of an approaching enemy formation, the ships got under way and formed in antiaircraft disposition. High above the island, concealed in a cloud, waited Capt. Joe Foss and his Grummans. Not far below cruised eight P-39's ready, after their bombing and strafing routine, for aerial combat. The combination of naval antiaircraft guns and Henderson's fighters proved lethal to the Japanese airmen.

At 1405, upwards of 20 torpedo bombers appeared low from behind Florida Island. In a long line abreast, they headed for the transports, eight Zeros covering. Diving into the combat, the P-39's found their canopies covered with mist as warmer air was reached, and one pilot, blinded, continued down into the sea. He was the 67th's only loss as against one Zero and one torpedo bomber to its credit. Altogether, three Zeros and one torpedo plane got away; none of the American ships sustained serious damage.

Scout planes up The Slot, meanwhile, had discovered that the Japanese were moving down a task force, probably with the intention of attacking the transports off Guadalcanal, and towards evening the latter were accordingly withdrawn. Then Admiral Callaghan headed back for Savo, where he fought against odds, one of the wildest night actions in naval history. Both sides suffered heavily, the Japanese more heavily, and Henderson took no shelling that night.

Air Reinforcements

Thus far the defense had succeeded, but the main Japanese onslaught had not yet been met. To counter it, the *Enterprise, South Dakota,* and *Washington* had moved out from Noumea on the 11th. COMSOPAC began to concentrate land-based aircraft on Guadalcanal. Fresh SBD's, TBF's, and Wildcats were flown in and on 12 November, at 1530, something new was added. Eight Lightnings landed on the fighter strip just east of Henderson.

There is a pleasant story about the advent of these P-38's. It holds that as the Marines on the field spotted the Army pilots climbing out of their formidable fighters they cheered wildly and rushed out to greet them—with reason, for old friends had come. Leading the flight was Maj. Dale Brannon, who back in August had brought the first P-400's, the "klunkers," into the strip the Japanese had begun. With him were other former 67th pilots, veterans of the Jagdstaffel.

The eight P-38's belonged to the 339th Fighter Squadron. Late in August it had been decided to activate a fighter group in New Caledonia, to comprise the 67th, 68th, and 70th Fighter Squadrons and another yet to be activated. By the end of September the orders had gone out; on 3 October, the 347th Fighter Group and the 339th Fighter Squadron were officially in existence. As cadre for the 339th, the old 67th provided 29 officers and 106 enlisted men, with Major Brannon in command. With him to the new organization passed the four lieutenants who had accompanied him on the pioneer hop to Guadalcanal. Command of the 67th went to Capt. John A. Thompson, who had headed the second flight of P-400's from New Caledonia.

In September, General Harmon acquired P-38's diverted from General Kenney's command. These were assigned to the 339th. During October the Lightnings were held in New Caledonia; training was not yet complete and frequency of naval bombardments of Henderson too high to risk the new fighters on Guadalcanal. By mid-November, however, they were ready to move.

On the morning of the 12th, the P-38's had left Tontouta at 0700, escorted by a B-17. Upon landing at Espiritu after 3½ hours' flight, mechanics discovered that low fuel consumption would have permitted a non-stop flight to Guadalcanal. The pilots, however, already showed fatigue. En route to Henderson, radio report of an enemy attack was received, and the B-17 carrying the ground personnel turned back at the southern end of San Cristobal. Consequently, when the planes landed, the Marines turned to and serviced them. On the 13th, additional AAF reinforcements arrived: eight more P-38's from the Fifth Air Force, flying in nonstop from Milne Bay.

Dawn of Friday the 13th found the Japanese battleship *Hiyei* limping northwest of Savo. A casualty of the encounter with Admiral Callaghan, she became the main preoccupation of the American planes in the combat area. First blood was drawn by the *Enterprise,* which was cruising south of Guadalcanal with a damaged No. 1 elevator. The carrier decided to ease operations by sending some of her planes to Henderson Field. Nine TBF's and six fighters flew off and at 1100 sighted the *Hiyei,* a light cruiser, and four destroyers headed for Guadalcanal, perhaps to finish off the *Portland,* lying off Lunga Point. The TBF's promptly put three fish into the battleship.

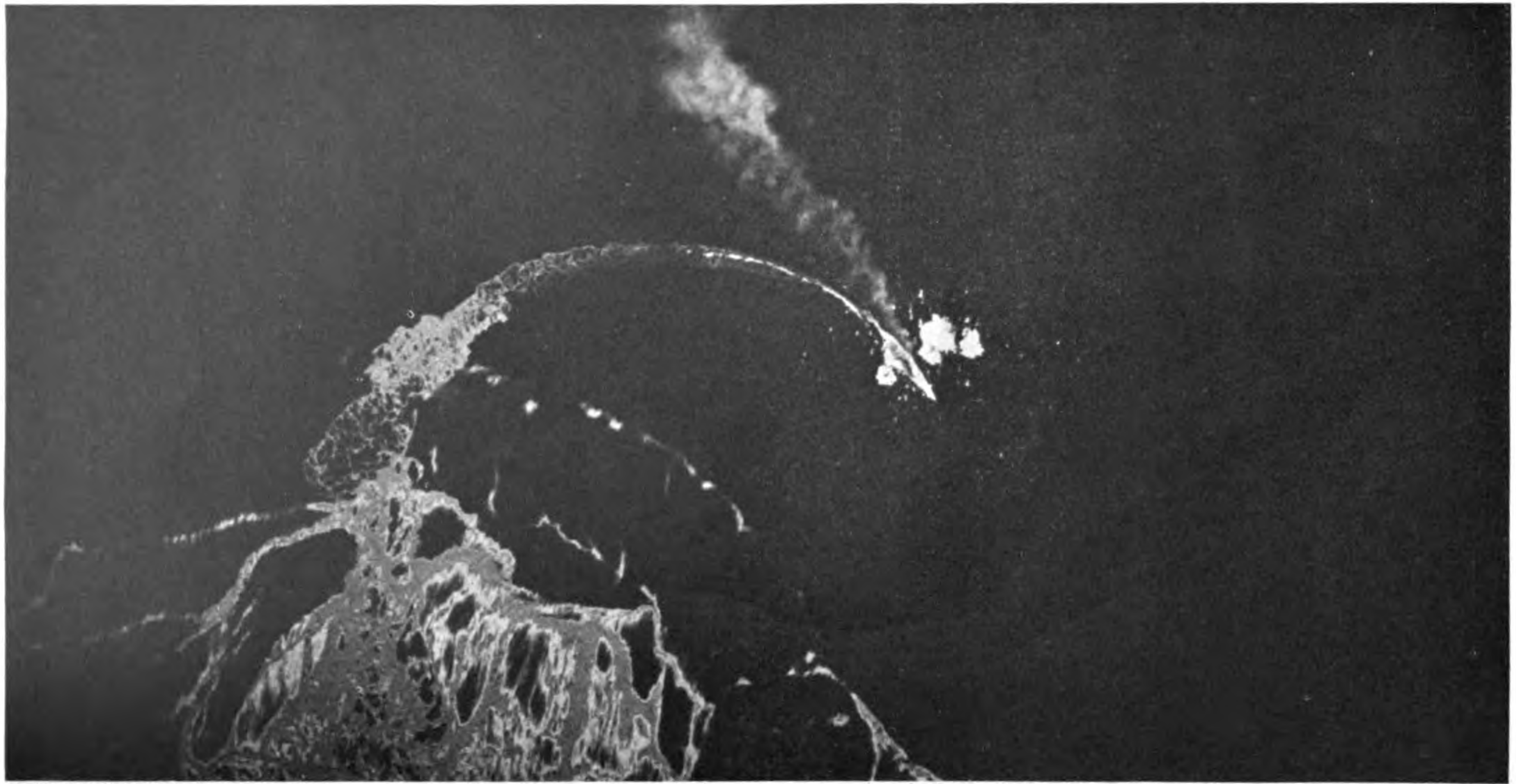
Shortly afterward 17 Forts arrived. These had departed Espiritu at 0500 and had subsequently been ordered to attack a carrier and a battleship reported by a search B-17. The indicated targets were out of range and the bombers proceeded to Guadalcanal, where they found the *Hiyei,* circling slowly with her escorts. Despite heavy AAA fire, one sure hit was obtained and five probables. All day long Marine and Navy aircraft at Guadalcanal hammered the *Hiyei,* the 67th providing top cover with four of its planes. By evening, however, the battleship was still afloat.

It is probable that the *Hiyei* was towed into position to assist in the bombardment of Henderson Field that night. The shelling, carried out by destroyers and cruisers as well, lasted 80 minutes until interrupted by the PT boats from Tulagi. On the field, one SBD and two F4F-4's were destroyed and 17 F4F-4's damaged. The 67th seemed to be the main target, every salvo but one landing near its camp at the north end of the fighter strip. Sixteen planes had been in commission the evening before; only one now remained, "the Resurrection, the oldest, most beat-up klunker on the field." Affording some consolation, nothing but an enormous oil slick suggested the *Hiyei* on the 14th. Whether at this point the Japanese supposed Henderson Field had been knocked out, as it had virtually been knocked out by similar shellings in October, or thought that the American Navy was too weak to interfere, or accepted a combination of these hypotheses, is unknown. At any rate, Japanese transports which had been hovering in the Upper Solomons finally reversed course and came on for Guadalcanal.

Concentrate on Jap Convoy

On the 14th COMSOPAC directed the *Enterprise* to attack these transports and as additional striking power the B-26's of the 70th Squadron were sent up to Guadalcanal. Under Maj. Leroy L. Stefanowicz, 10 Marauders, in company with four P-38's, left Plaines des Gaiacs at 0800. At Espiritu Santo, the bombers were refueled and took off, disappearing in the clouds before the P-38's could be readied for flight. Meanwhile, during the morning, the planes of the *Enterprise* and Marine flyers from Henderson struck at the warships, now retiring to the north, whose shells had wrought such havoc with the 67th the previous night.

At 0830, General Harmon had reported that his search B-17's had sighted the Japanese convoy—cargo ships and transports, 12 of them 20 miles north of New Georgia. The escort consisted of a near-dozen warships never positively identified. In addition, there was an advance group of vessels including at least one battleship. Among the B-17's making contact was "Typhoon McGoon." "Typhoon McGoon" came back to Espiritu with tail surfaces entirely shot away. It had fought off 3 ME-109's, 3 Zekes, and a Rufe, shooting down 3 of these



DIRECT HIT. B–17's of the 11th Bombardment Group halted Japanese battleship of the Fuso class when one Fortress obtained a hit with a 500-pound bomb. Following B–17's obtained additional hits and when last seen the ship was burning furiously. The action occurred north of Savo Island on 13 November 1943.

and perhaps 2 more. First Marine Air Wing at Guadalcanal heard "Typhoon McGoon's" report and the dive and torpedo planes were readied.

The convoy, carrying a force which General Vandegrift put at 30,000 to 35,000 troops, had been sighted and hit during the morning by SBD's from the *Enterprise*. At 1018, 16 B–17's were ordered to attack from Espiritu. While the Forts were making their way northward, Marine and Navy planes from Henderson carried out two damaging strikes on the Japanese armada. The B–17's arrived in two flights, the first securing one hit on a transport from 17,000; the second straddling a seaplane tender from 20,000. Of 15 land-based Zeros intercepting, at least five were shot down. The bombers suffered only minor damage. Throughout the day the destruction of the transports, now separated from their escort, continued. The 67th, able to put only four planes in the air, helped provide high cover for the TBF's and SBD's. By nightfall, eight of the 12 vessels were either sunk or gutted.

In the early morning hours of Sunday, 15 November, the U. S. Navy task force, commanded by Rear Adm. Willis A. Lee, sailed past Savo with the *South Dakota* and the *Washington* and slugged the Japanese hard. The enemy had come down with a force including two battleships and a half-dozen cruisers; he left for safer waters minus the *Kirishima,* the *Hiyei's* sister ship. Two cruisers, one heavy and one light, may also have been sunk.

With daylight of the 15th, one of the 67th's P–39's was out looking for breakfast fires, new tracks through the jungle, any sign of enemy activity. It was no routine patrol. Along the shore at Tassafaronga, about 18 miles west of Lunga Point, the pilot saw a beached vessel; two more were in process of beaching and another was heading for shore. Here were the survivors of the 12-ship convoy which had been worked over the afternoon before. To make sure, the pilot flew over at 800 feet with the AAA literally bursting under his nose, then back to Henderson with his discovery.

Mop-Up

Abetted by the Navy and Marine flyers, the 67th Fighter and 70th Bombardment Squadrons played havoc with the beached vessels. By 0700 the 67th had in commission five planes which went out with the

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SBD's and the B–26's. All five dived on the last ship to reach the beach, scoring two direct hits, setting the vessel afire. The B–26's dropped a 1,000-pounder on the third ship from 8,000 feet; two more 1,000-pounders burst among small craft attempting to unload supplies. At 0900, the 67th returned with seven aircraft, to put four bombs on the only vessel not then burning.

When the Japanese vessels were reported off Tassafaronga, 14 B–17's left Espiritu to attack. The first flight, arriving over the beach to find the destroyer *Meade* shelling ships which were already on fire, did not bomb. The second flight continued on up to the Russell Islands, made two hits on a burning transport—one of four derelicts abandoned by the Japanese in that area.

The Marines meanwhile had been able to bring a 155-millimeter battery to bear on one of the ships, in addition to the 600 rounds the *Meade* had expended. Marine or Navy aircraft attacked all day, and at 1045 four P–39's made a hit on the least damaged of the blazing hulks. On their return the flight spotted the bow of a sinking warship. Heads bobbed in the water nearby, whether friendly or enemy the pilots did not know. Returning to the *Meade,* the flight strung out in line, flew across the destroyer's bow, waggling wings—out to the survivors and back. Three of these circuits convinced the destroyer and she went to investigate. The bobbing heads *were* American.

The ruined vessels off Tassafaronga burned for 4 days, their twisted hulks symbolic of the blasted Japanese hopes. A phase of the Solomons campaign was at an end: Guadalcanal and Tulagi were now secure and the American forces could give some thought to an offensive. The decision in November, unlike that of the previous month, had been obtained in two short but intense naval actions. The 67th, chief victim of the only Japanese shelling during the critical period, had been unable to strike heavy blows. Nor, in the nature of the case, could the B–17's based 640 miles away at Espiritu. Admirals Scott and Callaghan, killed in action, and Admiral Lee deservedly garnered the greater part of the glory.

* * *

After their decisive beating in mid-November, the Japanese made no major effort to recover Guadalcanal. During December and January the Express continued to run, putting small forces ashore and a rather large one on 14 January. These increments, however, were in the nature of replacements. Henceforth, the enemy was forced to content himself with a tenacious defense; never again did he mount a sustained threat to Henderson Field.

For the Americans, the defensive period on Guadalcanal was over by December. The 1st Marine Division had borne the brunt of the Japanese assaults on Henderson Field. With the exception of the 8th and 2d Marine Regiments, it was withdrawn on 9 December to be replaced during December and early January by two Army divisions. These were the Americal, which began arriving in November, and the 25th. These units, plus the fresh 6th Marine Regiment and the 2d Battalion of the 10th Marines, now proceeded to the offensive on Guadalcanal. On 9 December, Maj. Gen. Alexander M. Patch, USA, succeeded General Vandergrift, USMC, as island commander.

With more abundant fuel and supplies, air operations proceeded on a more extensive scale. The pattern remained the same. The Marines still directed air activity, but the USAAF was more heavily represented. The AAF now was able to send up additional fighter units, its heavy bombers moved forward to base on Guadalcanal, and all forces struck regularly at the Express on its trips down The Slot. Buin was in easy range of the B–17's and the new Japanese base at Munda Point received constant attention.

On 17 December a preliminary offensive to the west was initiated. When the 25th Division, under Maj. Gen. J. Lawton Collins, was brought into position, a determined drive up Guadalcanal's north coast was undertaken. The XIV Corps' push, opened on 10 January, proceeded amid bitter fighting, and finally freed Henderson from the menace of Pistol Pete. On 9 February organized Japanese resistance was eliminated. On the 8th, a search plane sighted 15 enemy destroyers heading up the channel, the last run of the famous Express. It had apparently evacuated the remaining officers and active troops and left hundreds of sick, wounded, and starving Japanese to be swept up by the Army.

AAF units on Guadalcanal worked with the ground forces in much the same manner as had the old 67th Fighter Squadron. Better planes were available: P–38's for escort, P–40's for the middle air, and P–39's for escort and ground strafing. If a particularly stubborn enemy strongpoint were encountered, the B–17's might be called on to clear the way. The 67th had retired from Guadalcanal for a well-deserved rest, but pilots of the 44th, 68th, 70th, and 339th Fighter Squadrons took up the burden.

Most significant among these encouraging events was the activation of the Thirteenth Air Force, occurring, appropriately enough, on 13 January 1943. Although operational control remained with COMSOPAC, AAF units henceforth were trained and administered by a theater air force, under General Twining. It was this air force, evolved from such pioneer units as the 11th Group and the 67th Fighter Squadron, that was destined to move up through the Solomons until it rested on the Admiralties beyond Rabaul, then to swing along the north coast of New Guinea, through successive forward strides, anticipating the day when its mission reports would come in headed—Tokyo.

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AIRBORNE ASSAULT ON HOLLAND

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Airborne Assault on Holland

An Interim Report

Published by Headquarters, Army Air Forces
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Office of Assistant Chief of Air Staff, Intelligence

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FOREWORD

This is the fourth in a series of interim reports published by Headquarters, Army Air Forces. The original material was prepared by historical officers of the First Allied Airborne Army and the IX Troop Carrier Command, and by a committee of officers from this Headquarters who visited the theater after the operation, on the basis of official records and first-hand observation. This text has been abridged and edited in order to provide for combat personnel in all theaters a succinct summary of the planning and execution of the airborne invasion of Holland.

The conscientious and able work of staff personnel in the theaters makes possible the publication of this series, the intent of which is to cover the more important campaigns and individual missions in all theaters of operations.

Comments and criticisms are invited. They should be addressed to: The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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Official Photo USAAF

Lt. Gen. Lewis H. Brereton, Commanding General, First Allied Airborne Army.

Airborne Assault on Holland

The Situation

CONFUSED and disorganized, the Wehrmacht was retreating across France and the Lowlands. Ever since the St. Lo breakthrough Allied pressure had been relentlessly applied, giving the enemy no time to rally his forces for a stand. He was careening toward the Siegfried Line where, if permitted, he could be expected to catch his breath and establish a defensive position.

To the Allies the Siegfried Line presented a formidable obstacle. To penetrate the heart of the German homeland it was necessary to pass, not only this system of fixed defenses with its artfully constructed tank traps, minefields, and fire-control points, but also that natural barrier, the river Rhine.

Why not accomplish both aims at once? Why not do it now, while enemy forces were still reeling?

The logical place to achieve the double result of flanking the Siegfried Line and crossing the Rhine was at Arnhem, on the Neder Rijn in Holland. Once across the river here, Allied troops would be beyond the right flank of the Siegfried defenses and in position to swing behind them and on into the Fatherland. The flat terrain of northern Germany remaining beyond Arnhem offered a favorable route for armor.

Just as Arnhem was the most likely point of attack, the most feasible method was an airborne operation. With paratroops and glider-borne units to seize strategic bridges and landing fields, it was estimated that armored and infantry forces could push rapidly forward

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The ranks of officers mentioned in this booklet are those they held at the time of the events described herein.

and take over control. The all-important factor was to hit the enemy at this most vulnerable point before he could gather his resistance. It is well for those inclined to criticize the timing of the operation to consider this imperative need for immediate action. Had the attack proved completely successful, the results of this boldly conceived plan would have amply justified the risks involved. Not that the Holland assault can be deemed a failure; it was possibly 80 per cent successful, since the Allied front was advanced 48 miles in the northern sector and only one difficult river crossing remained.

It was the consensus of both United States and British airborne staffs and of the IX Troop Carrier Command (IX TCC) staff that of all airborne operations in the European theater to date, this was the most brilliantly conceived, planned, and executed. Not only did the air component and the forces it carried perform creditably, but losses were far smaller than anticipated. The units carried out their assigned missions, according to plan as modified by weather and enemy reaction, in such manner as to clear the way for Lt. Gen. Miles C. Dempsey's armor, in case it came through close to schedule. Tactical air preparation was thorough. Troop carrier operations, depending heavily upon available radar and radio aids, were precise and definite, utilizing to great advantage the experience of IX TCC in other theaters. Due to air preparation and the high degree of saturation attained in the area, troop carrier and glider losses were not only lower than expected, but were probably not one-quarter so great as would have been incurred by night, when higher operational losses may be looked for. The airborne divisions (United States 82d and 101st and British 1st) acquitted themselves as only airborne units with considerable experience could have done. The 82d Division in a series of bitter fights captured a number of vital bridges prior to the arrival of the Guards Armoured Division and then, assisted by the latter unit, engaged in the desperate assault on the important Nijmegen bridge so vital to the success of the ground operation and, by that time, to the relief of the hard-pressed British 1st Airborne Division. Operations of the 101st Airborne Division, which repulsed with bazookas and artillery a charge of 30 tanks, were equally spectacular. However, while this booklet inevitably discusses to some extent the activities of the ground forces in the Battle of Holland, it is primarily the air component which concerns us here.

Army Supply and Airborne Training

Perhaps the most persistent difficulty which the First Allied Airborne Army (FAAA) encountered in its attempt to train for and carry through airborne operations during August and September 1944 was the drain on its troop carrier resources by the requirements for air transport of supplies to the rapidly advancing armies. It was a constant tug-of-war. The Army, needing supplies, turned to the facilities of IX TCC as best suited to produce results. FAAA tried to keep Army demands to a minimum and to suggest other means of satisfying air transport needs. In an effort to secure alternate means of transporting freight, Lt. Gen. Lewis H. Brereton, Commanding General of FAAA, sought to get war-weary heavy bombers about to be returned to the United States, and on 17 August asked Supreme Headquarters Allied Expeditionary Forces (SHAEF) to make available 250 B–24's with their crews until 25 August. This request was rejected because it would entail diversion of combat aircraft.

Some progress toward combat training was made when, on 22 August, Lt. Gen. James H. Doolittle, Commanding General Eighth Air Force, offered to allocate heavy bombers to help in hauling freight, and turned over three B–17's and three B–24's to IX TCC for tests on types and amounts of cargo to be carried, time of loading and unloading, fuel consumption, and size of field required.

The situation was further alleviated with FAAA's acquisition of 38 and 46 Groups (RAF) for aid in the supply-carrying assignment, and by a directive from Headquarters United States Strategic Air Forces (USSTAF) to Eighth Air Force to set aside bombers for this purpose capable of 100 flights a day, to be placed under command of FAAA when necessary. One hundred sixty-seven B–17 supply sorties were flown in the week ending 2 September and 364 sorties the following week.

With the Holland airborne operation impending, the hauling of freight was stopped on 15 September. It had been a period full of frustrations and difficulties, when the hydra-headed needs of an invading army had had to be met with whatever was at hand. That the airborne troops, and the crews who flew them in, did so brilliantly is all the more admirable in the face of stupendous training difficulties.

Preparation for the Attack

Having returned from the Mediterranean theater after completion of the invasion of southern France, IX Troop Carrier Command was immediately alerted for a possible airborne mission. Other operations had been planned to be used if desired. Although on several occasions some of these plans were developed to full staff studies and the actual marshaling of aircraft and troops was accomplished, the ground forces advanced so fast as to render the operations unnecessary, since the terrain in question had been overrun by friendly troops.

By directive of the Supreme Commander, dated 5 September 1944, FAAA was ordered to cooperate with 21st Army Group in a contemplated northward advance. The troop carrier operation was to place airborne troops in position to seize the vital bridges of the Maas, Waal, and Neder Rijn rivers to facilitate the advance of the British Second Army along the axis Eindhoven-Grave-Nijmegen-Arnhem. (A proposed troop carrier operation against Walcheren Island had also been studied and rejected by FAAA as not feasible because of concentrated flak defenses, impossible glider landing zones, excessive water, big dikes, numerous canals, and other terrain difficulties.)

IX TCC, commanded by Maj. Gen. Paul L. Williams, and augmented by 38 Group and 46 Group, was to transport parachute and glider troops and equipment and to effect aerial resupply to British and American forces. The advanced command post, established at Eastcote, England, was used by the air commanders concerned as a combined headquarters, from which point all activities were directed. All final decisions as to route, air cover, and weather were made by General Brereton through his G–3, Brig. Gen. Ralph F. Stearley, coordinated through Combined Headquarters at Eastcote.

Plans of IX Troop Carrier Command

After an initial study of the capabilities of IX TCC, with application to the problem in hand, a coordinating conference was called of all air and airborne commanders involved, with a view to forming the tactical plan. At this meeting the over-all problem was studied and all commanders voiced their opinions.

Selection of staging airfields was based on the then location of troop carrier fields, distance from target areas, tactical composition of airborne units, suitability for marshaling gliders, and location of supplies for emergency resupply missions to airborne troops. Airborne troop units were made up to coincide with the tactical air formation desired by the troop carrier forces. A few exceptions were made from the actual number of aircraft per serial desired by IX TCC, when maintaining the desired number for the air serial would have meant poor tactical composition on the ground.

Troop carrier routes.—Routing of troop carrier aircraft was based on the following factors:

1. Shortest distance to target area with consideration given to prominent terrain features.
2. Traffic control patterns for IX TCC and RAF units.
3. Inner artillery zone and balloon areas in United Kingdom.
4. Enemy antiaircraft and searchlight batteries.
5. Avoidance of dog-leg turns over water.
6. Choice of prominent, irregular coast line for making landfall.
7. Shortest distance over hostile territory.

It was decided to choose two routes to the target area: one to the north, traveling over enemy territory from the coast to the target area; the other to the south, traveling over friendly territory from the coast on, and through a corridor held by our own forces. This was done to provide greater security and to improve the flexibility in the execution of the whole plan. By simultaneous use of both routes, troop carrier forces were subjected to a minimum of ground fire and caused the enemy to divert aircraft over a far greater area to cover both courses. Proof of the advisability of such a plan was seen on D plus 1 when, with the southern route rendered impassable by weather, the northern way was unaffected.

Navigational aids.—Location and types of navigational aids were selected in the same manner as for night operations. Even though this was a daylight mission, the problem of navigation was to be made as simple as possible. For security reasons each site was given a code name. Call signs were assigned to the site. Tests and analyses of navigational sites were made in an effort toward perfect performance.

At the wing assembly points were Eureka beacons, M/F beacons, and searchlight cones. Aids of this nature were used to great advantage as rendezvous points for group and serial formations, and as wing departure points. Departure points on the English coast, where serials started their North Sea crossings, were equipped with Eureka beacons, M/F beacons, and occults flashing the assigned code letters. Along the routes and approximately halfway between friendly and enemy coasts were stationed two marker boats. Each of these carried a Eureka beacon and a green holophane light, sending the assigned code letter. These boats, serving as definite fixes over the water, contributed greatly to the accuracy of arrival times over target areas. Since Holland was enemy-held, landfall on the Dutch coast was made by dead reckoning, plus special radar equipment in lead aircraft. Prior to the main force's arrival at drop zones (DZ) and landing zones (LZ), pathfinder teams established Eureka beacons, M/F beacons, panels, and colored smoke. These navigational aids served for identification of individual DZ's and LZ's, as well as for homing purposes for serial leaders. From the boat markers pathfinder crews located the target areas by means of special radar equipment.

Timing.—Timing of troop carrier aircraft was based on the following factors:

1. To provide safe intervals between serials.
2. To provide for the shortest possible column time length.
3. To allow sufficient time on ground for servicing aircraft and resting combat crews between missions.
4. To gain best advantage from element of surprise.
5. To put parachute troops in enough ahead of gliders to secure glider LZ's.
6. To have a special number of gliders in as early as possible after parachutists in order to provide troops with early artillery support.
7. To have parachute serials spaced 4 minutes head to head and glider serials 7 minutes head to head.

Timing schedules used clock time and were based on H-hour, in case H-hour was changed because of weather or operational reasons. A quick calculation then could be made to obtain times over turning points, initial point (IP), and drop and release times.

Altitudes.—Altitudes were chosen with regard to avoiding small-arms fire, heavy antiaircraft fire, minimum safe altitude for drops and releases, and clearance of aircraft coming in with those returning from the target area:

Altitude:

DZ's	500 feet MSL
LZ's	500 feet MSL
Out	1,500 feet MSL
Back	3,000 feet MSL

Speeds flown.—

Parachute aircraft	140 m. p. h. IAS
Pathfinder aircraft	150 m. p. h. IAS
Aircraft towing gliders	120 m. p. h. IAS
Parachute aircraft from IP to DZ	120 m. p. h. IAS
All aircraft returning	150 m. p. h. IAS

Corrected speeds were given 2 hours prior to each mission, after final winds and altimeter settings had been received.

Rope drop.—Glider tugs were instructed to drop ropes in predetermined drop zones common to all aircraft on return after release. Each tug dropped its rope immediately after clearing the LZ, thus facilitating rope recovery.

Pay loads.—The following maximum pay loads were established for the operation:

Parachute aircraft	5,850 lbs.
Horsa gliders	6,900 lbs.
CG–4A (Waco) gliders	3,750 lbs.
Tug aircraft	nil.

Formations.—Parachute aircraft were to fly in 9-plane vee of vees in serials up to 45 aircraft, in trail, with 4-minute intervals head to head between serial lead aircraft. The formation for glider columns was pairs of pairs, echeloned to the right, serials up to 48 aircraft towing gliders in trail, with 7-minute intervals between serial lead aircraft. These intervals and formation patterns provided for sufficient maneuverability of columns and gave excellent concentration to paratroops and gliders on the ground in the target area.

In determining the formations to be used, every effort was made to keep the column time length at a minimum to insure the greatest benefit from fighter escort and permit the shortest time over enemy territory. Since the operation was to take place by daylight, it was possible to tighten the formation intervals, beyond the minimum established for night missions, to 4 minutes head to head between serial lead aircraft in paratroop formations and to 7 minutes head to head between glider formations. Besides shortening the intervals, the planners established three parallel streams to the target region. A left-hand stream went from the IP to DZ's and LZ's in the Arnhem vicinity with paratroops and equipment for the British 1st Airborne Division; aircraft in the center stream were to fly from the IP to DZ's and LZ's in the neighborhood of Nijmegen with paratroops and glider troops of the United tates 82d Airborne Division; and the right-hand stream was to take aircraft to DZ's and LZ's in the Eindhoven area with paratroops and glider troops of the United States 101st Airborne Division. Each of the outside lanes was 1½ miles from the center stream. A fourth channel was provided for aircraft of 38 and 46 Groups, which were to take the center stream at 1,000 feet greater altitude.

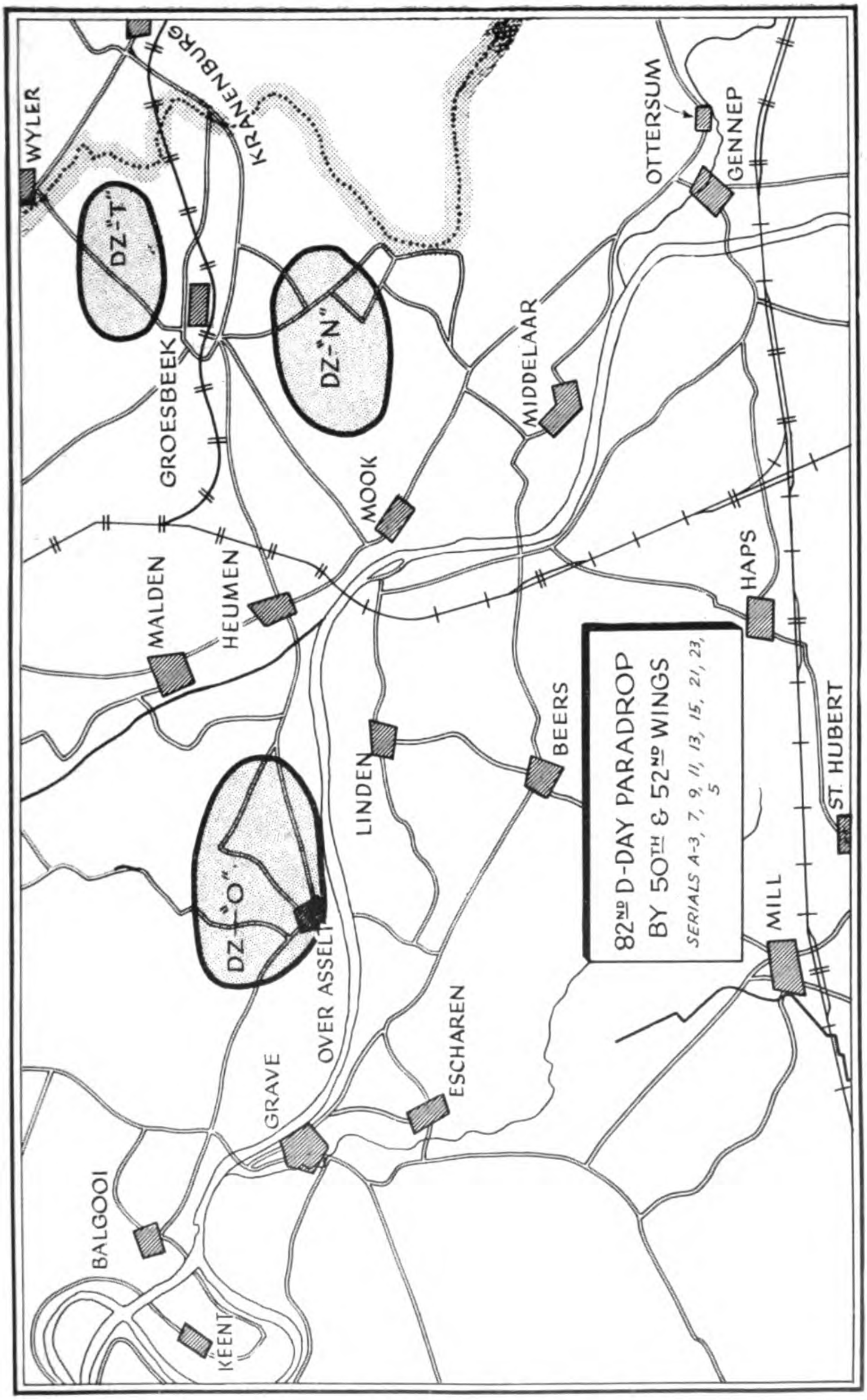
Emergency landing fields.—Arrangements were made for emergency landing strips by notifying all airdromes in operation in East Anglia, as well as landing strips in northwestern France and in Belgium. East Anglian airdromes specifically under IX TCC control were at Chipping Ongar and Boreham.

Evasive action.—In order to insure the maximum possible concentration on the ground for paratroops and gliders, combat crews were to take no evasive action between the IP and the DZ's and LZ's.

Failure to release or drop.—It was the responsibility of wing and group commanders to enforce the policy that *no* paratroops or gliders were to be returned to staging airfields, that all paratroops must be dropped and all gliders released in the target region.

Air cover.—Air cover for troop carrier forces and airborne troops was provided by the United States Eighth and Ninth Air Forces, and by RAF's Air Defense of Great Britain (ADGB), Second Tactical Air Force (2d TAF), Coastal Command, and Bomber Command. Their specific assignments were:

Eighth Air Force—Escort and neutralization of flak from IP's to DZ's and LZ's, and resupply to airborne troops on D plus 1.
Ninth Air Force and 2d TAF—Air cover for airborne troops after drop.
ADGB—Escort and flak neutralization from landfall to IP's.
Coastal Command—Diversionary missions.
Bomber Command—Diversionary missions and bombing of enemy installations.
2d TAF—Photo reconnaissance of target areas.



82ND D-DAY PARADROP BY 50TH & 52ND WINGS

SERIALS A-3, 7, 9, 11, 13, 15, 21, 23, 5

Antiaircraft artillery control procedure.—All Allied agencies, air, ground, and sea, were informed of the detailed flight plan of the troop carrier columns. Orders were issued to all Allied troops in the vicinities of the routes and targets not to fire on any aircraft until further notice.

Narrative of the Operation

Intention and Plan

THE airborne operation was planned and undertaken to implement the intentions of the Supreme Commander for the drive into Germany. He had given first priority to the advance of the Northern Group of Armies across the Rhine. The First Allied Airborne Army was to act in cooperation with the Northern Group of Armies until a bridgehead was secured across the lower Rhine.

The supply situation required that operations be held to a minimum on the fronts of the First, Third, and Seventh American Armies while the Northern Group of Armies, aided by the FAAA, struck northward.

As has been pointed out, the intention was to place airborne troops in a position to seize vital bridges across the three principal Dutch rivers in the line of advance of the British Second Army from its bridgehead across the Escaut Canal. The Guards Armoured Division was to spearhead the attack of the British XXX Corps and was to be passed northward through a corridor established by the airborne landings.

At the time, the enemy was withdrawing his forces across the Scheldt estuary while still holding both its banks, was bringing troops around north of the Escaut Canal to positions in the line farther east, and was maintaining his positions in the Dutch ports to prevent improvement of the Allied supply situation. However, his forces had been badly depleted and broken up in the battle of the Normandy pocket and in the retreat across the Seine, so that enemy troops in the line of the British Second Army's advance were not thought to constitute a formidable military force.

The airborne task force was commanded by Lt. Gen. Frederick A. M. Browning, GOC British Airborne Troops, with General

Brereton commanding the air phase of the operation. Once the airborne troops were on the ground, General Browning came under the command of the XXX Corps, part of General Dempsey's British Second Army.

The principal missions of the several units of the task force follow: the United States 101st Airborne Division to capture bridges and roads along the route between Eindhoven and Grave; the United States 82d Airborne Division to seize the bridges over the Maas at Grave and over the Waal at Nijmegen; the British 1st Airborne Division, together with the Polish Parachute Brigade, to capture the bridges at Arnhem. In each case the surrounding area was to be held until the Guards Armoured Division could effect a junction, upon the accomplishment of which the airborne troops were to protect the sides of the corridor. The British 52d Light Division (Air-portable) was to come into the Arnhem vicinity as soon as an air strip could be prepared by the airborne engineers.

It is axiomatic that surprise is an essential element in the success of an airborne attack. To make the enemy believe that the Allied supply situation was too acute to enable an advance by the Northern Group of Armies, the cavalry patrols of the XXX Corps were withdrawn as much as 10 miles in some instances. At the same time the American First and Third Armies made attacks into Germany and across the Moselle in order to mislead the enemy as to Allied intentions. Meanwhile troops and supplies were being concentrated in the large bridgehead which the British Second Army held on the north bank of the Albert Canal ready for the thrust to the north.

RAF Starts

D-day to D plus 1.—The first blow in cooperation was struck by the RAF Bomber Command the night of 16–17 September. The four airfields at Leeuwarden, Steenwijk-Havelte, Hopsten, and Salsbergen, from which fighters were in a position to attack the transports and gliders, were bombed by 200 Lancasters and 23 Mosquitoes, which dropped some 890 tons. The same command bombed a flak position at Moerdijk with 54 Lancasters and 5 Mosquitoes, dropping 294 tons. Two Lancasters were lost. Results in all 5 instances were reported to be good. A small force of 6 B–17's the next morning bombed the Eindhoven airfields with good results.

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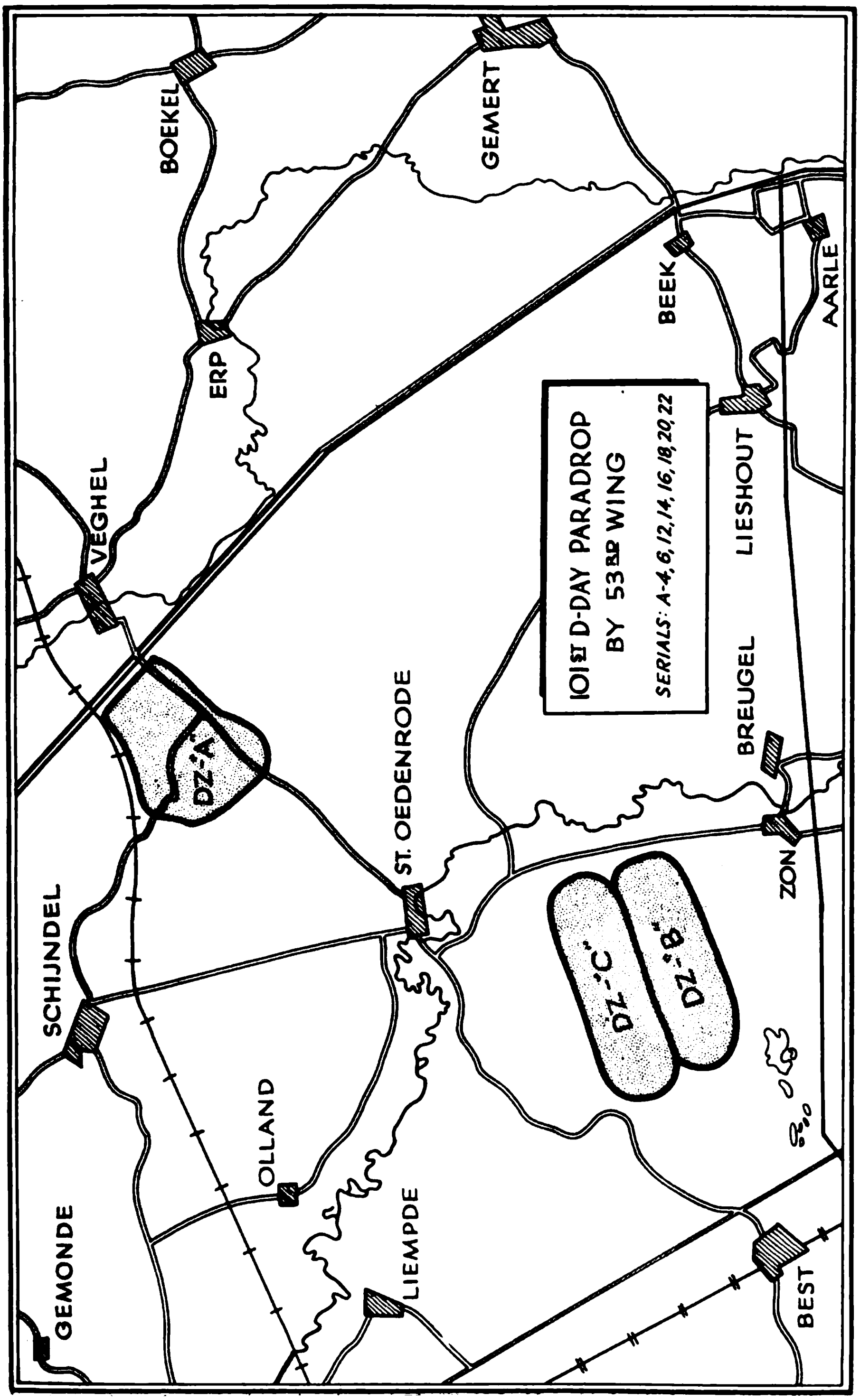
D-day weather was favorable. Overland fog at the English bases cleared by 0900 and the stratus at 800 feet by 1030. Over the North Sea the weather was fine, and, though there was 5/10 to 8/10 cloud over the Continent, the bases were above 2,500 feet and visibility was 4 to 6 miles.

In the hour and one-half from 1025 to 1155 Sunday morning, 17 September, the greatest troop carrier fleet in history took off. Approximately one-half of 3 divisions became airborne. Elements of the British 1st Airborne Division and corps headquarters, with their equipment, were lifted from the Newbury region by 145 United States parachute aircraft and 354 British and 4 American gliders towed by 358 British tugs. The troops of the American 101st Airborne Division, coming from the same area, were transported in 424 United States parachute aircraft and 70 United States gliders towed by American tugs. From the vicinity of Grantham came elements of the United States 82d Airborne Division in 480 United States parachute aircraft and 50 American gliders towed by United States tugs. The total force, including the pathfinder aircraft that led the way to each drop and landing zone being used that day, was made up of 1,544 airplanes and 478 gliders. The streams of aircraft converged toward East Anglia and passed over the North Sea. At the coast 2 trains were formed. The planes carrying the British 1st Division and the United States 82d Division followed a route over the Dutch island of Schouwen to the IP at Boxtel, where a turn to the left brought them to their drop zones and landing zones. The planes of the 101st Division followed a southern route over friendly territory from Ostend to the IP at Gheel, where they also turned left to their objectives.

Air cooperation was of four kinds: fighters provided escort and withdrawal cover; fighters provided an umbrella cover over the drop and landing zones; fighters undertook antiflak patrol; bombers attacked flak positions.

Since the northern route lay over enemy territory from the coast to the objectives, whereas the southern course did so only after the initial point, most of the antiflak operations were along the northern route. A force of 821 B-17's of the Eighth Air Force dropped 3,139 tons on 117 flak positions with 43 good, 24 fair, and 50 poor results. They were escorted by 153 P-51's. In a daylight mission 85 Lancasters and 15 Mosquitoes of the RAF Bomber Command bombed 3 coastal de-


101st D-DAY PARADROP
BY 53rd WING
SERIALS: A-4, 6, 12, 14, 16, 18, 20, 22
BOEKEL
GEMERT
ERP
BEEK
AARLE
VEGHEL
LIESHOUT
BREUGEL
ST. OEDENRODE
DZ-"A"
SCHIJNDEL
ZON
DZ-"C"
DZ-"B"
OLLAND
LIEMPDE
GEMONDE
BEST

fense batteries in the Walcheren area, dropping 533 tons with good results. Escort was provided by 53 Spitfires.

A force of 550 Eighth Air Force P–47's, P–38's, and P–51's performed escort and antiflak patrols. ADGB contributed 371 Tempests, Spitfires, and Mosquitoes on the northern route, allocated in the ratio of about 60 per cent to escort and 40 per cent to antiflak patrols. The Ninth Air Force gave umbrella cover over the drop and landing zones with 166 fighters.

What may be regarded as air cooperation with the airborne troops on the ground, rather than with the operation itself, was given by 84 Mosquitoes, Bostons, and Mitchells of 2d TAF, which attacked barracks at Nijmegen, Cleve, Arnhem, and Ede. Three aircraft were lost on these missions.

The thorough coverage of flak positions was very successful. Not only were land batteries knocked out, but several flak ships and barges off the Netherlands islands were smashed. No British troop carrier aircraft or gliders were lost, but 35 American troop carrier aircraft and 13 American gliders were destroyed.

Luftwaffe reaction to this great airborne operation was hesitant. (In a later section of this booklet the over-all enemy air reaction is discussed.) Approximately 18 Focke Wulf 190's, which engaged one group of Eighth Air Force fighters near Wesel, were the only enemy aircraft encountered. Of these, 7 were shot down for the loss of 1 United States fighter. Most of the other losses of the cooperating air forces were to flak. Losses for the day: Air Defense of Great Britain, 0; Ninth Air Force, 1; Eighth Air Force fighters, 17; Eighth Air Force bombers, 2.

The 2 great trains of transports and gliders bearing the airborne forces reached their drop and landing zones on schedule. In all, 335 British aircraft with 323 gliders, 1,044 American aircraft, and 108 United States gliders got through to their objectives. The drops were reported to be excellent, the planes flying low and in close formation to put their paratroops exactly into the prescribed zones. Gliders also were seen to make their landings well, and the fields were rapidly cleared for the following aircraft.

Those elements of the 101st Division which dropped and landed between Veghel and Eindhoven very quickly consolidated their position. By nightfall the divisional headquarters had been set up in St.

Oedenrode, and Veghel to the north and Zon to the south had been occupied by small detachments. Another force was pushing southwestward toward Best. The bridge over the Wilhelmina Canal south of Zon was found destroyed but a crossing was soon made on an improvised bridge, and by last light this force had reached Bokt.

The Guards Armoured Division was pushing up from the south against stiff resistance. Jumping off at 1400, by nightfall they held Valkenswaard, 6 miles below Eindhoven. The next morning resistance was encountered at Aalst, which was by-passed to the west. Junction was made with elements of the 101st Division at 1100 in the village at Nieuw Acht, northwest of Eindhoven. By noon the 101st had occupied Eindhoven and the Guards Armoured were in the southern outskirts. The latter entered the city during the evening.

Initial success also fell to the elements of the 82d Division with which General Browning's corps headquarters landed. By the first evening the bridges over the Maas at Grave and over the Maas-Waal Canal at Heumen had been taken intact, while the high ground southeast of Nijmegen was occupied, as well as that south and southwest of Groesbeek. One force had pushed into the city of Nijmegen and approached the south end of the road bridge over the Waal, taking 100 prisoners. Corps headquarters was established just south of Nijmegen. The bridge over the Maas-Waal Canal at Hatert was found damaged and that at Malden had been blown up by the enemy.

Enemy Strikes Back

The German forces in the Reichswald to the east soon made their presence known and the following morning a severe counterattack was launched from this direction. A call for air power to aid in dealing with this threat was sent out, and a force of 97 Spitfires and Mustangs of 2d TAF was dispatched to the area.

Meanwhile, under increasing German pressure on Nijmegen from the east, the troops which had approached the south end of the bridge across the Waal were forced by afternoon to retire to the center of the city. During the day of 18 September many more prisoners were taken, the total by night being 1,000.

The British 1st Airborne Division, dropped and landed west of Arnhem, ran into stern resistance almost immediately. The 1st Parachute Brigade succeeded in reaching the north end of the road bridge over the Neder Rijn, but was unable to wrest it from German forces at the south end.

D plus 1 to D plus 2.—The second air lift went in on D plus 1. It had been planned to use both northern and southern routes again, but it was decided to send the planes in by the northern route only because rain and thick cloud were spreading northward across Belgium toward the area of operations. The take-off was between 1000 and 1100 under 5/10 to 8/10 cloud with bases between 2,000 and 3,000 feet, but conditions improved as the North Sea was crossed, and over the target areas the weather was clear.

The force dispatched, in both aircraft and airborne troops, was similar to that sent out on D-day. The headquarters of the Polish Brigade and resupply for the British 1st Division were carried in 126 United States and 35 British parachute aircraft. Troops of the 1st Division went in 299 British gliders towed by British tugs. The American forces were transported in gliders, since all parachute units had gone in on D-day. The 82d and 101st Divisions employed 904 American tugs and gliders. Of the total force of 1,356 planes and 1,203 gliders, 1,306 of the former and 1,152 of the latter reached the drop and landing zones. Two British tugs and 2 British gliders were lost, along with 20 American aircraft and 19 American gliders. Later in the day 252 Eighth Air Force B–24's were dispatched to drop supplies to the airborne troops; 246 of them dropped 782 tons with good to excellent results. They were protected by 183 P–47's, P–38's, and P–51's of the Eighth Air Force. Thirteen bombers were lost to flak.

The escort for the troop carriers was provided by Air Defense of Great Britain and the Eighth Air Force. These forces also dispatched fighters to strafe and knock out flak positions, 277 Spitfires, Tempests, Mustangs, and Mosquitoes of the former and 415 P–47's and P–51's of the latter being employed in these operations. Enemy reaction was much stronger than on the preceding day; Eighth Air Force fighters encountered some 90 Messerschmitts. Losses in escorting fighters to all causes were: Eighth Air Force, 28; ADGB, 6.

As the D plus 1 reinforcements were arriving in the area of the 101st Division, elements of that organization and of the Guards Armoured Division were pushing northward. The bridge at Zon was rapidly repaired to carry tanks. By 0830 on the morning of 19 September the Guards reached Grave, where junction with the 82d was made. By

1800 the advance armoured elements were crossing the Maas-Waal Canal. By 1415 the XXX Corps commander had joined General Browning at his headquarters south of Nijmegen. Troops of the 82d Division were still in the center of town. There was continued pressure from the vicinity of the Reichswald, and Groesbeek was being shelled. Because of this a message was sent back requesting that the gliders land in Zone "O" to the west of Nijmegen on D plus 2. Before the junction with the Guards, the 504th Infantry Parachute Regiment had captured the bridge over the Maas-Waal Canal south of Neerbosch.

The situation of the British 1st Airborne Division deteriorated between the air missions of D plus 1 and D plus 2. The 1st Parachute Brigade held a position near the north end of the road bridge, but became completely isolated and was subject to severe attack. Later the 1st Air Landing Brigade was almost cut off near the river bank south of Verbrink. The rest of the division was engaged in heavy fighting west of Arnhem.

Weather Interferes

D plus 2 to D plus 3.—Poor weather of 19 September cut down the airborne effort and postponed H-hour until 1500. The aircraft which took off had great difficulty in reaching their objectives and many turned back. The meteorologists recommended the northern route, but it was not used because it was feared that a third mission in succession on this course would run into disastrous flak. Supplies for the British 1st Airborne Division were dispatched in British aircraft and troops of the Polish Brigade in British gliders towed by British planes. Of 60 aircraft taking off to resupply the 82d Division, only 36 reached their destinations. Reinforcements were sent to the 101st Division in 385 aircraft and 385 gliders. Only 213 of each arrived. Twenty-five planes and 97 gliders were listed as lost or missing, with the remainder abortive.

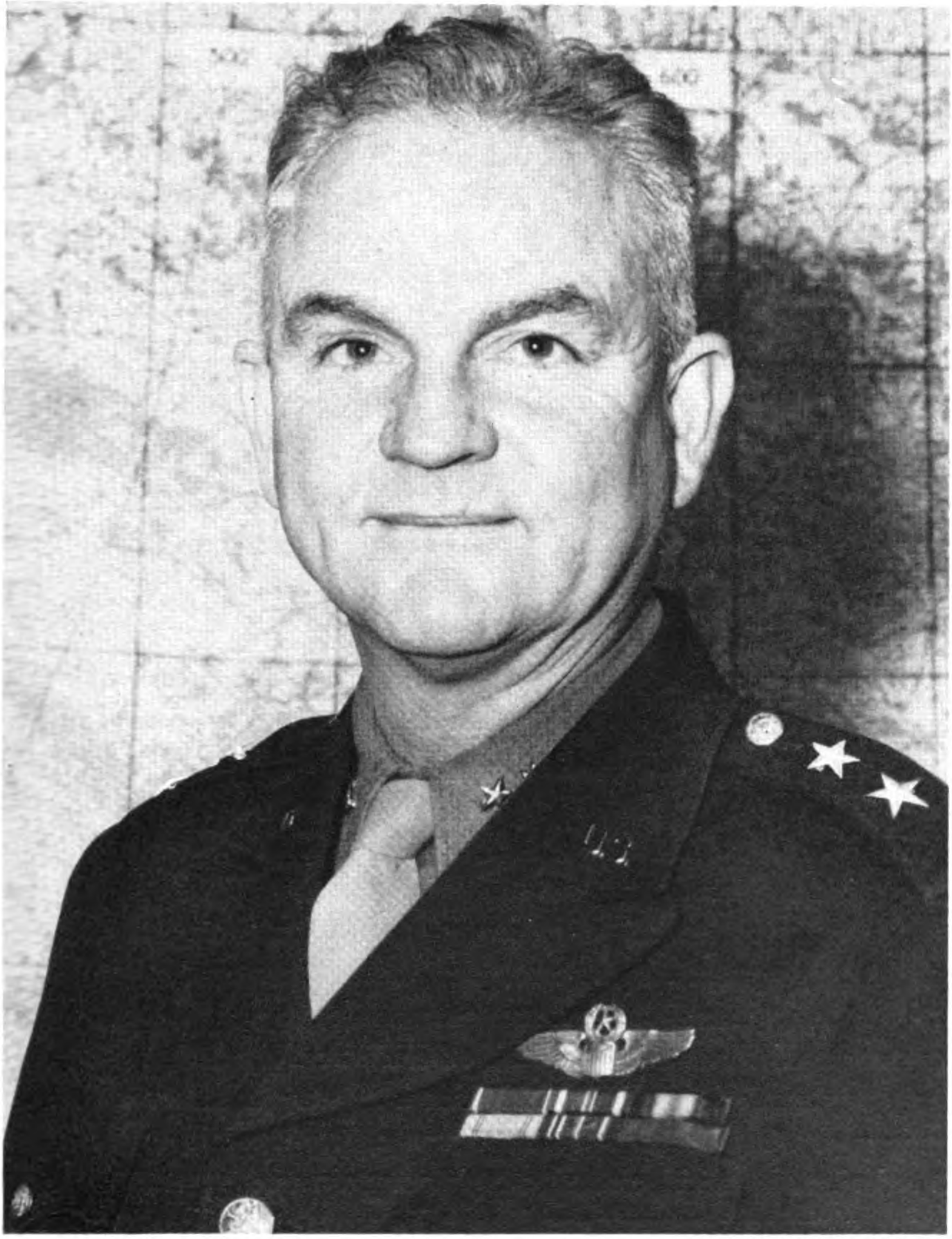
Escort consisted of 127 Spitfires of ADGB and 182 Mustangs of the Eighth Air Force. Severe flak was encountered between the IP and the drop and landing zones. The enemy also put up strong fighter formations. Eighth Air Force fighters met more than 125 Me 109's and FW 190's. Their claims were 23 destroyed, 1 probably destroyed, and 4 damaged. Nine P-51's were lost.

The late afternoon of 19 September and all day 20 September saw severe fighting for the town of Nijmegen and the crucial bridge over the Waal. The plan of attack was for the 504th Parachute Infantry Regiment to make an assault crossing of the river and attack the north end of the bridge while the Guards Armoured Division attacked it frontally. Other units of the 82d Division were to aid in the drive through Nijmegen to the bridge. This plan was carried out with great skill and courage in the face of murderous German fire from an old fort on the north bank of the river. By nightfall the bridge had been taken. Why the enemy did not destroy it when his position became hopeless is not known.

Farther south, the enemy infiltrated across the narrow corridor from the west and was with difficulty pressed back to Schijndel. Fighting was very stiff at Best, which the airborne troops had not succeeded in capturing. The British 43d Infantry Division was moving up behind the Guards Armoured Division.

By morning of 20 September the situation of the British 1st Airborne Division was serious. Most of the supplies in the D plus 2 lift had fallen into enemy hands. The men of the 1st Parachute Brigade, who had stubbornly dominated the north end of the bridge for 3 days, finally lost control of it at noon of 20 September. The main body west of the city was also under extreme enemy pressure from both east and west. About 25 Luftwaffe planes strafed the British troops during the day. The divisional commander reported that he was forming a close perimeter defense around the village of Hartestein. After bitter fighting the 1st Air Landing Brigade carved its way back to this defensive zone. The ferry at Heveadorp was still under the division's control, and the main road bridge was reported intact. The commander requested that the troops of the Polish Parachute Brigade be dropped on 20 September just to the south of the river near the terminus of the Heveadorp ferry.

D plus 3 to D plus 4.—Weather made impossible the transport of Polish parachutists to a drop zone on 20 September as planned, and only resupply missions were flown. There was low stratus cloud over England in the morning; in the Channel there was morning haze becoming 7/10 to 10/10 cloud in the afternoon, with bases 2,000 to 3,000 feet, visibility 1 to 2 miles. On the afternoon over the target areas there was 6/10 to 8/10 cloud with visibilities 1 to 2 miles in haze. The southern route was used. In all, 163 British and 350 American aircraft took



Official Photo USAAF

Maj Gen. Paul L. Williams, Commanding General, Ninth Troop Carrier Command.

off, and 162 and 338 respectively reached their objectives with losses of 14 and 0 respectively. Flak in the Arnhem region, where the British were resupplying, was very intense and accurate. Most of the supplies dropped to the 1st Airborne Division reached the enemy. Escort was by 248 fighters of ADGB, of which 3 were lost, and 679 of Eighth Air Force, 5 of which failed to return. No enemy aircraft were encountered. The Ninth Air Force had 43 P-47's on uneventful patrol over the battle area in the late afternoon.

On the morning of 21 September the Guards Armoured Division and elements of the British 43d Infantry Division were making a determined effort against stern resistance and under the handicap of heavy rains to reach the beleaguered 1st Airborne Division. By evening the forward units had pressed several miles toward the Neder Rijn from the Waal and had brought the enemy forces in Arnhem under artillery fire. The Germans were continuing stiff counterattacks on the Nijmegen area from Reichswald.

Reinforcement Impossible

The situation of the British 1st Airborne Division can only be termed extremely critical. It had been impossible to reinforce it with the Polish Brigade. Division headquarters had no news of the 1st Parachute Brigade, and heavy casualties were being suffered by the main body. Rations were one for three men. The enemy succeeded on 21 September in wrenching control of Heveadorp ferry from the British troops.

D plus 4 to D plus 5.—Again on 21 September the weather played the enemy's game. Low stratus persisted over eastern England until afternoon, when slight improvement made possible the attempted transport of about half the Polish Parachute Brigade and the most urgently needed supplies. No glider tows were tried because of the miserable weather. Again the southern course was taken. One hundred nineteen British aircraft carrying supplies and 177 American aircraft carrying paratroops and supplies took off under escort. Of these, 114 British and 128 United States planes completed their missions, but 29 of the former and 4 of the latter were lost before they could return to friendly territory. Between 80 and 100 enemy fighters were in wait for Allied aircraft. These were engaged by some of the 137 Spitfires, Mustangs, and Mosquitoes of ADGB escorting the

Stirlings and Halifaxes, and by some of the 95 P-47's and P-51's guarding the C-47's. Twenty of the enemy were shot down and 4 were damaged. Four P-47's were lost.

The outlook for the 1st Airborne Division was a little brighter on the morning of 22 September because air resupply had been accomplished and because about 900 men of the Polish Brigade were just south of the Neder Rijn, where they had dug in along the south bank of the river and were standing off assaults from the east and south. The previous day's rains had made the going for tanks impossible off the main highways; accordingly, the 43d Infantry Division passed through the Guards Armoured Division, held up at Elst. The German commander at Arnhem had gathered a strong fighting force of 15,000 to 20,000 men from the miscellaneous elements at his disposal. This force was mercilessly shelling and mortaring the main British body and, by attacking from all sides, was slowly compressing the perimeter of the 1st Division defense zone. German loud-speakers went into action, demanding surrender of the British forces, which fought doggedly on.

Meanwhile, far in the rear, the Germans were keeping their pressure on the western side of the corridor; heavy fighting continued at Best. The 506th Parachute Infantry Regiment launched an attack toward Wintelre. Headquarters of the 101st Infantry Division was moved from St. Oedenrode north to Uden. The British 11th Armoured and 3d Infantry Divisions were moving up the right flank of the corridor toward Helmond.

D plus 5 to D plus 6.—Bad weather went to worse; on 22 September no air operations were possible. Until 1400 there was cloud at less than 1,000 feet over the English bases, with much the same conditions prevailing over the battle region all day. There were patches of stratus over the North Sea at 300 to 600 feet. Despite these conditions, 10 FW 190's were seen during the day at Oosterbeek.

On the afternoon of 22 September the advance of the Guards Armoured Division along the main roads toward Arnhem was being held up at Elst, but elements of the 43d Division had by-passed this resistance to the west and had made contact with the Polish Brigade near Driel at 2016. A ferry service was put into operation at Oosterbeek the night of 22-23 September, and a few Polish troops crossed with supplies. The following day this ferry was reported destroyed by

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the enemy. Even though friendly forces were near, the plight of the 1st Airborne Division was no better. Subjected to attack by tanks which had come up during the afternoon of the 22d, by self-propelled guns, and by mortars, the unit stubbornly maintained its perimeter defense. Some help was being given by friendly artillery, which was shelling German positions from across the river. A report from the Dutch resistance movement speaks of a group of Welsh, together with a few Poles, being surrounded and wiped out at Oosterbeek on 23 September.

At Nijmegen the 82d Division was buttressing its position by clearing out the enemy from the bend of the Waal to the east toward Erlekom. Farther down the corridor, the enemy made a sharp attack from the east with 30 tanks and 2 battalions of infantry on the afternoon of the 22d. For the second time since the junction of the Guards Armoured with the 82d Division, the supply corridor was cut. The Germans reached the main road between Uden and Veghel and were able to maintain their position until the next morning. The Guards Armoured started southwest from their position near Nijmegen when the attack was launched, and the next morning they succeeded in forcing the enemy to withdraw, thus clearing the supply channel again.

D plus 6 to D plus 7.—The largest airborne program since D plus 1 was carried through on D plus 6, 23 September. The weather, which had been wretched for 4 days, improved in the morning over England and in the afternoon over the Continent. The opportunity was seized to send troops and supplies to the hard-pressed 1st Airborne Division and the remaining glider lifts to the 82d and 101st Divisions. One hundred twenty-three British Stirlings and Dakotas transported the supplies to be parachuted to the 1st Division. None of these aircraft was abortive, but 12 were lost in the battle area. The drop itself was not a success; most of the ammunition and supplies were recovered by the enemy. Forty-one American aircraft dropped the Polish parachutists at Drop Zone "K" on the south bank of the Neder Rijn. While this drop was reported to be successful, 7 of the aircraft were lost. The missions for the 82d and 101st Divisions took 490 American tugs and gliders. Thirty-eight of these missions were abortive, but only 1 aircraft and 1 glider were lost. The landing of the 325th Glider Infantry Regiment at Grave to reinforce the 82d Division was highly successful.

Escort for these large airborne forces was furnished by 123 fighters of ADGB and 586 of the Eighth Air Force. The Luftwaffe reacted more strongly than on any previous day; Eighth Air Force planes met some 135 enemy fighters, of which 8 were claimed destroyed, 2 probably destroyed, and 6 damaged. The ADGB encountered no enemy planes, but lost 2 Spitfires to flak. Total losses of the Eighth Air Force were 11 P–47's and 11 P–51's.

Corridor Made Firm

The 22 September cutting of the road axis by the enemy showed the wisdom of the Allied policy, begun about that time and continued in the succeeding days, of widening the corridor from the bottom. Units of the VIII Corps were fed in behind the XXX Corps and began pushing out the shoulders on either side. The 101st Division came under the command of the VIII Corps on 24 September, and was moved farther up to protect the sides of the corridor above Veghel. Another enemy counterattack was started on the evening of 23 September from the direction of Erp on the east toward Veghel, but was repulsed. By the next noon Erp was reported cleared of the enemy.

At this time the Royal Netherlands Brigade came into the Allied order of battle and was assigned to hold the line near Grave. Farther up, the 82d had succeeded in pushing its front line eastward to include all the bend of the Waal, but the enemy still held positions close to Nijmegen on the southeast. On the morning of the 24th, the 82d had the distinction of being the first airborne unit to enter a town on German soil, the village of Beek.

In the crucial areas north and south of the Neder Rijn west of Arnhem, Allied forces were waging a desperate struggle to link up. Approximately 360 Polish troops, who had parachuted on 21 and 23 September, crossed the river the night of the 23d, but were able to take with them only such ammunition and supplies as they could carry on their backs. Ferrying by daylight was impossible, since German artillery had the crossing under fire. To the south of the Polish Brigade there was a firm link with troops of the 130th Brigade, 43d Division, which had pressed around Elst to the west and approached the banks of the river.

On the far shore of the river the battered elements of the 1st Airborne Division still remaining were grimly holding out. Their perimeter had been further compressed, but they were heartened by strong supporting artillery fire from the southern bank and by the hope that succor was near.

D plus 7 to D plus 8.—Again on 24 September weather stringently limited air operations. Rain and low cloud prevailed over Britain in the morning and over the battle area in the afternoon. Only the most essential missions were carried out. Four Dakotas of 46 Group (RAF) based in Belgium took off to drop supplies west of Arnhem. Two did not drop their cargoes and the two which did saw no ground signals in the drop zone. All four were damaged by flak. Seventeen Dakotas based in Belgium resupplied the 82d Division. Fifteen dropped their bundles, and two landed on the strip which had been prepared west of Grave. Thirty-six Spitfires furnished uneventful cover.

Second TAF also endeavored to aid the 1st Airborne Division, sending offensive patrols into the Arnhem region at intervals. A special group of 22 Typhoons equipped with rockets performed a close cooperation mission, and ground reports indicated they were effective against enemy mortars and infantry.

During the night of 24–25 September small elements of the 130th Brigade crossed the Neder Rijn in boats and, together with about 400 Polish troops already on the far side, joined in the defense of the perimeter held by the 1st Airborne Division. During the day the German Air Force strafed the troops. A decision was reached on the morning of the 25th that the position north of the Neder Rijn was untenable in the face of such formidable supply and reinforcement difficulties. Plans were made to withdraw the troops of the 1st Airborne Division that night under the protection of the newly arrived fresh forces. Below the Neder Rijn the situation was improving as more troops got across the Nijmegen bridge. Elst had finally been taken late in the afternoon of 24 September and the corridor had been considerably widened to the west.

By morning of the 25th the 82d had consolidated its positions in the bend of the Waal to the east and was pushing back the enemy southeast of Nijmegen.

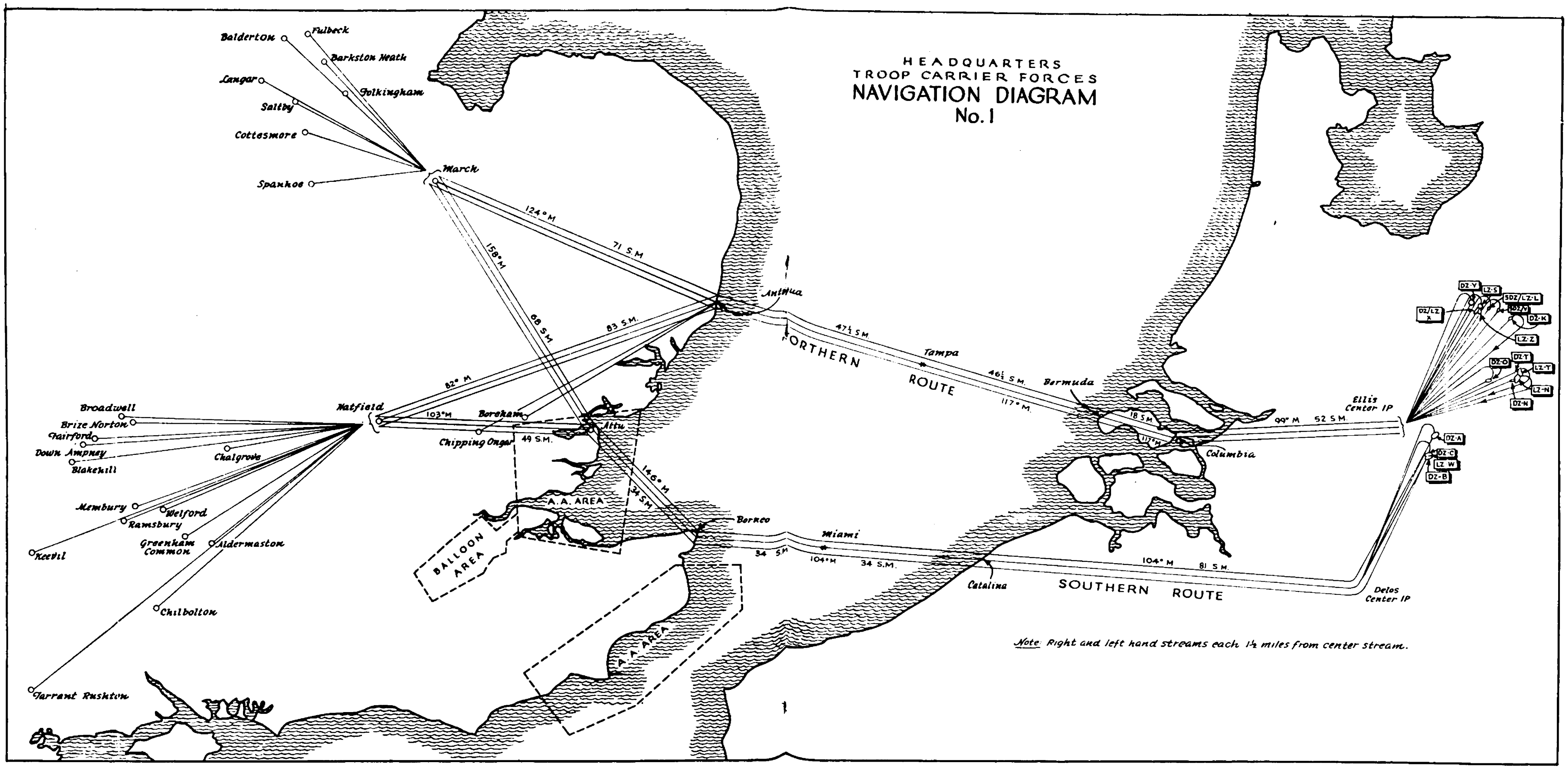
The supply road from the south was attacked for the third time in the late afternoon of 24 September. This time the thrust, which was in some strength, came from the west. Not only was the road cut between Veghel and St. Oedenrode, but the enemy managed to maintain his position astride the road for 36 hours. There was no traffic at all on the highway on 25 September.

D plus 8 to D plus 9.—Although the weather on 25 September was more generally favorable than on the preceding day, there were showers with cloud bases 1,000 to 2,000 feet over the Channel and the Holland area. Thirty-four American planes were dispatched on resupply missions to the 101st Division. There were no aircraft abortive and none lost. Escort, 60 Spitfires of ADGB, suffered no losses and made no claims.

In 2 missions 2d TAF came to the aid of the troops near Arnhem. Seven Typhoons strafed enemy guns and troops around the defense perimeter, while 53 Mitchells and 21 Bostons bombed guns and mortars. A good concentration was achieved and a blockhouse was knocked out. Escort was flown by 96 Spitfires and Mustangs of ADGB. These formations were attacked by 12 FW 190's, part of a force of about 100 enemy aircraft in the neighborhood. Apparently the other aircraft in the enemy formations were bombers attacking the Nijmegen bridge, since some 40 were reported by the ground forces to have dropped on that target. The bridge, although hit by 1 bomb, remained passable. From the ensuing combats between the opposing air forces, 2 Mitchells, 1 Boston, and 2 fighters were lost, and claims against the enemy were 16 aircraft destroyed, 1 probably destroyed, and 19 damaged.

British Withdrawn

The planned withdrawal of the battered men of the 1st Airborne Division was accomplished during the night of 24–25 September. Roughly 2,000 troops groped their way through enemy lines across muddy fields, under constant fire, to the river bank, where most of them crossed in assault boats and barges and on rafts. Some swam the 150 yards of swift water. Upon reaching the southern bank they had to walk several miles in a drizzling rain before reaching the assembly area, where they were loaded in vehicles and carried back to Nijmegen. Behind them, near Arnhem, they left 1,200 wounded,


HEADQUARTERS
TROOP CARRIER FORCES
NAVIGATION DIAGRAM
No. 1

Note: Right and left hand streams each 1½ miles from center stream.

for whose care arrangements had been made with the Germans.

The withdrawal was tragic for these men, who had fought so bravely against crushing odds for 8 long days. Right up to the end it had seemed that relief could be accomplished, but sufficient forces could not be brought up in time to cross the river by assault. The German tactic of continuous pressure on the supply in the Veghel vicinity had been successful. The interdiction of this vital road for 36 hours beginning on the afternoon of 24 September had been the decisive factor. After that the alternatives were to withdraw the 1st Airborne Division or leave it to a fate of gradual and inevitable extermination. Pride, prestige, and the doubtful distinction of continuing a hopeless fight were not permitted to outweigh the saving of those gallant men.

One round had been lost, but the battle was still on. The 101st Division went into action on the afternoon of 25 September, attacking hard to reopen the road south of Veghel. The battle was waged through the night to a successful conclusion the next morning, when the enemy was again thrown back. However, the road remained within German artillery range and the gantlet still had to be run.

In the sector of the 82d Division a successful push to the northwest had been made on 20 September in which the town of Oss had been captured. Now the 82d was advancing in the opposite direction into Germany beyond Beek.

D plus 9.—On the afternoon of 26 September two important British units were flown to the air strip west of Grave. The weather, nonoperational in the morning over Holland, cleared by afternoon. The

1st Light Antiaircraft Battery and the Airborne Forward Delivery Airfield Group were carried in by 209 C–47's. There were no abortive planes and no losses. The assignments of the transported units were to handle air freight at the Grave strip and to protect it against enemy aircraft. Escort was furnished by 182 fighters of ADGB and 100 fighters of the Eighth Air Force. The former encountered no enemy aircraft and suffered no losses, but those from the Eighth engaged 50 Me 109's and FW 190's in combat, claiming 32–1–8 for a loss of 2 United States planes.

During the day 2d TAF had some 250 Typhoons, Mustangs, and Spitfires in the Arnhem area on armed reconnaissance and in direct cooperation. They encountered 62 enemy aircraft, claiming 5–2–7, with 1 Mustang lost.

The final phase of the operation occurred during the night of 26–27 September. Not all the remainder of the 1st Division had returned the night before, nor had the covering troops been withdrawn. This was successfully accomplished under cover of darkness and was complete by morning of the 27th. It was decided to bring the 1st Airborne Division back to Brussels, whence it would be flown to England. The Polish Brigade was to continue as a fighting unit under the 2d Army and was withdrawn to the Ravenstein region.

Thus ended an engagement rich in heroism but fraught with frustration.

* * * * *

In spite of the difficulties at Arnhem the airborne operations had proceeded not only according to plan but also with much lower loss than expected. Moreover, they did much to disprove the view that daylight airborne operations over enemy territory heavily defended by flak are excessively hazardous. The great dividends in accuracy of dropping and landing and in quick assembly of troops, which are to be had by daylight, were enjoyed to the full. Three contributing factors were largely responsible for success:

1. Strong cooperating air forces were available and were skillfully employed to knock out flak positions in advance, to beat down flak during the airborne operations themselves, and to protect the troop carriers from hostile aircraft.
2. Excellent staff work so organized the movement of troop carriers, their protection by the cooperating air forces, and

the drop and landing zones of troops as to achieve maximum surprise. Large forces were placed at tactically important points either simultaneously or with a minimum loss of time.

3. Thorough training of both airborne and troop carrier personnel produced almost perfect accuracy in the drops and landings. Weapons were quickly retrieved and units rapidly formed up for the accomplishment of their initial missions.

From D plus 2 to D plus 8 weather seriously hampered resupply and reinforcement attempts, yet on the whole they, too, were accurately effected. It is true that higher loss rates were suffered on these succeeding days, but this had to be—and was—expected in the face of increasing enemy resistance.

The decision to carry out a bold daylight operation was one which General Brereton alone could make. His experience as Commanding General, Ninth Air Force, had convinced him that it could be done. The success of the airborne operations testifies to his sound judgment.

Glider Phase of the Operation

Considering the number of personnel carried, the tonnage of supplies landed, and the amount of equipment transported to the battle area, the glider phase was a success. This success was largely attributable to the careful planning of FAAA and IX TCC.

Immediately upon landing, glider pilots reported to the nearest United States command post. As soon as circumstances permitted, they were evacuated under orders of the command post to Headquarters 101st Airborne Division or Headquarters 82d Airborne Division for further air evacuation to the United Kingdom.

Ever since the invasion of Normandy, IX TCC had been marshaling gliders at the various fields under its control, anticipating a commitment of airborne forces. On D minus 1, gliders available amounted to 2,474. They carried 9,566 troops into combat, of a total of 30,481. This latter figure compares with 17,262 in the Normandy assault and 7,019 in the invasion of southern France. The gliders which did not reach their objectives were stopped by enemy fire or by mechanical difficulty. Transportation, one of the main concerns of airborne troops, was also delivered by gliders in the form of 705 ¼-ton trucks, 13 motorcycles, and 45 trailers for the ¼-ton trucks. The bulk of these were landed on D plus 1, D plus 2, and D plus 3. The respectable total of 2,476,594 pounds of equipment and supplies was landed by gliders during the operation. Had weather and the tactical situation permitted, this figure would have been much higher. During the operation, gliders were dispatched at the rate of about 2 a minute.

Reclamation of Gliders on the Far Shore.—After D plus 6, a team of officers and enlisted men of the IX TCC Service Wing (Provisional) was sent to make a survey of gliders in the landing zones, with a view to recovering and salvaging as many as possible. Following the survey, it was decided to construct a temporary landing strip for the purpose. The terrain was such that the engineering problems involved were mainly filling ditches, making drains, removing soft earth, and installing steel matting. The IX TCC Corps of Engineers section arranged with the IX Engineer Command to use the 876th Airborne Engineer Aviation Battalion to build the strip. Some heavy equipment of the Royal Engineers was used for earth moving.

Arrangements were then made with 2d TAF to obtain 150 tons of square-mesh track, located at a depot near Bayeux. Despite difficulties in transporting the mesh track, involving trucking and air freight, the landing strip was finished in 1 week. On 20 October the first gliders were lifted from the strip by aircraft of the 61st Troop Carrier Group. This date marked the start of glider recovery from the Holland operations.

Pathfinder Activity

Both airborne and air commanders felt that pathfinders should be used in the operation, but because the landings were to be made by daylight it was determined that a minimum number of personnel would be committed, with only enough time to set the equipment into operation prior to the arrival of the main serials. Final decision was that two teams, each consisting of one officer and nine enlisted men, would be committed to each DZ, 20 minutes before the arrival of the main serials. Except for one enlisted man, all these officers and men had participated in a combat pathfinder operation in Normandy and had volunteered for a second mission.

Past experience made preparations and briefing very smooth. Predrawn rations, ammunition, smoke, panels, and other essentials had been stored in the group's area for several weeks. Pilot-jumpmaster conferences were held as soon as DZ's were assigned; pinpoints were selected by jumpmasters and pilot-navigator teams; in conjunction with maps, jumpmasters studied divisional and regimental field orders. Enlisted men were briefed 24 hours before take-off time, and all personnel were restricted to the base from the time first orders were received until the return of the aircraft from the mission. Each officer and noncommissioned officer was issued a 1/25,000 map of the DZ area, and all personnel carried copies of the 1/100,000 map of the operational zone. *No maps were marked.* After 6 months of air-airborne teams working together, the utmost confidence and co-ordination had been achieved. The final pathfinder briefing for air crews and paratroops was held at 0830, 17 September 1944, following which all personnel proceeded to their assigned aircraft.

Mission of teams 1 and 2.—The assignment of these two teams was to drop upon and mark DZ "A" for the main effort, preceding the first group by 20 minutes. At 1040 they took off and followed a course generally east to the coast. Over the Channel a P-47 picked up the flight and escorted it to the coast of France. No other escort was seen. At a point where the British spearhead went deepest into enemy territory our aircraft bore north and continued at 1,500 feet. Orange smoke was observed marking the front line, and the two ships speeded to 180 m. p. h. Very heavy antiaircraft fire was received and at 1232, in the vicinity of Patie, Belgium, the plane carrying team 2, hit badly in the left engine and wing tank, fell flaming into a steep dive. Four 'chutes were seen to leave the door before the plane crashed, exploding in a sheet of flame.

The other aircraft continued through very heavy flak belts, taking no evasive action, until the railroad running generally east-west into Veghel was seen; at this point the pilot followed a course parallel to the tracks, slowed the plane over the DZ, and jumped the pathfinder team on the exact spot desired. The time was 1244 plus 50 seconds.

No immediate enemy resistance was encountered at the DZ, allowing the team time to put all navigational aids into operation in a very short time. Because of excellent drop speed, dispersion was slight, rendering assembly unnecessary. The Eureka was set up and in operation in 1 minute, while the panel "T" and the panel letter "A" took no more than 2½ minutes. While some difficulty was experi-

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enced with the CRN-4 antenna, this set was functioning within 5 minutes.

The first serial, due at 1304, arrived 3 minutes late and dropped at Veghel. The second and third serials, also 3 minutes late, dropped on the western half of the DZ. The Eureka and the CRN-4 were left in operation 12 minutes after the last serial arrived. No stray aircraft were seen.

Its mission completed—no glider landings or resupply drops having been scheduled for DZ "A"—the pathfinder team made its way to Veghel, where it established a road block in the main square with two men, cleaned out a street of buildings with three more, and sent the remaining four to take a bridge. Friendly troops were met within 30 minutes. After the initial drive, team 1 was used at various times as local security group, prison guards, and combat patrol.

Mission of teams 3 and 4.—These two teams were to drop and mark DZ's "B" and "C" for the main effort and for subsequent glider landings and resupply drops. The teams took off from Chalgrove airfield at 1040. Upon reaching the coast the aircraft circled twice to kill time, then flew the same course taken by teams 1 and 2. They also encountered heavy flak as soon as they reached the enemy lines, and the fire continued all the way to the drop. Although no evasive action was taken, the planes speeded to 180 m. p. h. Since DZ's "B" and "C" were actually one large series of fields, the teams dropped side by side at 1255, pinpointed exactly on the prescribed locations. Here again, assembly was unnecessary since the pilots had slowed their aircraft almost to a stall to assure a good jump.

The slight enemy resistance was overcome and did not slow the teams. The Eureka was in operation inside 1 minute, and the panels and CRN-4 within 4 minutes. The main serials all arrived 3 minutes late, at 1319, 1322, and 1325. Since the DZ's were adjacent and three serials were due to arrive at each, it was difficult to distinguish among them; however, the drop was exceptionally good, all troops hitting the DZ's and assembling without loss of time. Pathfinder personnel remained on the DZ's to guide glider landings and resupply aircraft for 6 days, when they were relieved.

Resupply for pathfinders.—The weight and bulk of navigational aids needed by the pathfinders made it impossible for them to carry in enough smoke and batteries to provide continuous operation of all

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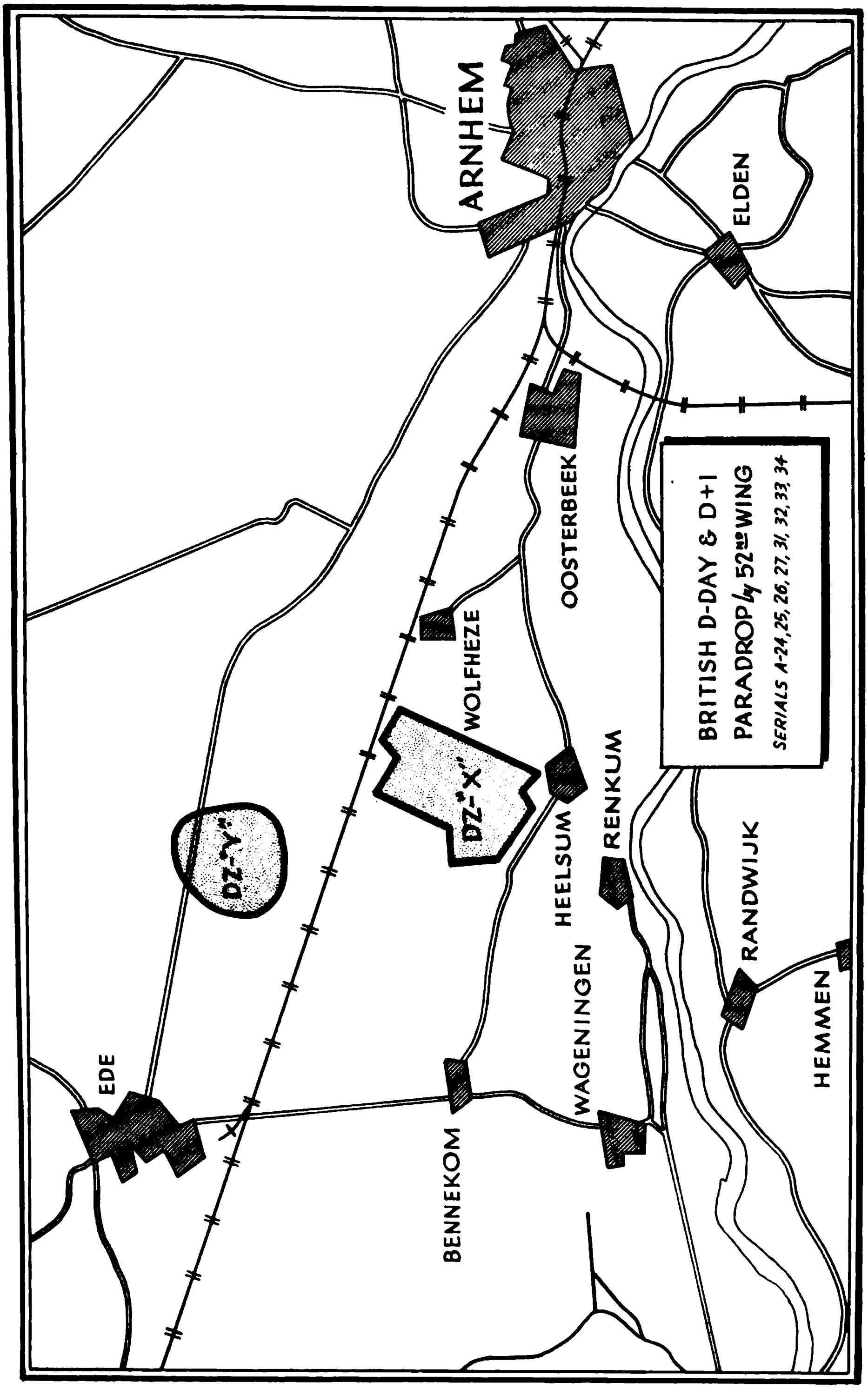

BRITISH D-DAY & D+1 PARADROP by 52nd WING
SERIALS A-24, 25, 26, 27, 31, 32, 33, 34

aids for subsequent landings of gliders. Accordingly a resupply mission was flown on D plus 1 with the necessary additional equipment. This resupply, consisting of a complete CRN-4, extra batteries for both Eureka and CRN-4, and a supply of smoke, landed approximately 20 yards from the Eureka on which the pilot was homing.

Air Evacuation

There was no direct air evacuation of casualties from advanced fields during the operation. Casualties, both British and American, were routed through the normal ground evacuation chain to Brussels, where IX TCC had an airdrome control party, including an air evacuation section, on duty. IX TCC was directed by FAAA to cooperate with the RAF in air evacuation from Brussels. Up to 10 planes a day were flown in accordance with standing operating procedures. Casualties were evacuated to Ramsbury and Membury, except for loads which were entirely British; these were landed at Blakehill Farm. There were no unusual incidents during the air evacuation.

Air-Sea Rescue Services

From D-day to D plus 9 a very cooperative and effective air-sea rescue service was maintained. Two corridors were established from D-day to D plus 2, and despite the fact that short notice was given for changes of time and route, this service provided facilities which resulted in the rescue of many of our personnel.

Naval control.—Naval equipment consisted of "R" motor launches, high-speed launches, and motor torpedo boats. It had been the common practice before narrow air corridors were adopted for air-sea rescue launches to carry out short patrols near their home bases, so as to be on immediate call for any emergency. This had proved efficient in the case of bombers returning from missions over the Continent, when they were not flying a predetermined course and were returning sporadically. However, before the airborne attack the suggestion was made to the naval authorities that, with 2 air corridors established, air-sea rescue launches be placed at irregular intervals along these routes. This idea was concurred in, and in the northern corridor alone 17 launches were so placed, with 10 in the much shorter southern lane.

The wisdom of this move was well demonstrated when the entire crew of a C-47 was forced to ditch on the return from Holland, and was picked up even before the aircraft had submerged. Because crews had been briefed that air-sea rescue launches would be spaced along the corridors, they were able to ditch at points where rescue could quickly be effected. On D plus 2, when weather over the sea was very bad and fog reduced visibility to about 1 mile, the plan again proved itself. Gliders were breaking tows in large numbers, yet one motor launch, stationed some 40 miles from the English coast, was able to pick up the entire crews of five gliders.

High-speed launches of air-sea rescue service spent 1,243 hours at sea.

Air Control.—Aircraft used in air-sea rescue included Spitfires and Walruses of ADGB, Hudsons and Warwicks of Coastal Command, and Thunderbolts of the USAAF. Because of their long range and durability, the Warwicks and Hudsons were very usefully employed in flying alongside serials on their route out. They were thus able to plot and report the exact position of aircraft ditching, and to go to the crews' assistance when there were no rescue launches in the vicinity. On the way back, with aircraft more spread out, this plan was less effective; it was at this stage that the Thunderbolts and Spitfires, able to cover a larger area in less time, proved of great value.

During the operation, 205 men were rescued from ditched aircraft and gliders.

The following figures give a summary of the patrols carried out by air-sea rescue service:

Sorties by Spitfires and Walruses of ADGB	148
Long-range sorties by Warwicks and Hudsons of Coastal Command	20
Sorties by Thunderbolts of USAAF	83
Total air sorties	251

German Air Force Reaction to the Airborne Landings

Just as the GAF failed to meet the challenge of the Normandy invasion, so it made a miserable showing against the Netherlands air-

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borne assault. Strained by aircraft and fuel shortages, forced to bring planes from inconveniently distant points, harried by commitments in other sectors, the Luftwaffe could not mount the furious defensive effort called for by so ominous a development. The following review, covering the period 17–23 September, gives an account of this relatively feeble attempt to smash the forces of the FAAA from the air.

The state of the weather was certainly a greater handicap to the Allies than to the enemy. While it prevented the GAF from putting up a maximum effort, it also kept the Allies from bringing to bear the full weight of their air superiority, as well as grievously hampering the resupply and reinforcement.

Although the GAF was quick to identify the main landing and drop areas, its reaction on the first day was slow. This was probably due to the fact that the German fighter forces based nearest to the landing points had already been committed to operations elsewhere, so that other units had to be pressed into service from localities as far away as Darmstadt. With the sudden extension of the battle area in Holland, the Germans certainly appraised the landings as a very serious threat. This led to employment on tactical tasks of units which had previously been engaged in the strategic defense of Germany against heavy-bomber raids, and involved their transfer from central Germany. Elements of these new forces were identified in tactical operations over Holland by 21 September. The extent to which this reinforcement of the western tactical forces was planned appears to have been about 300 aircraft, and represents a reversal of the former GAF policy of sacrificing tactical cooperation with an army in favor of defense of the homeland against daylight bombing. However, despite this strong numerical reinforcement in fighters, the scale of effort over Holland was in no way commensurate with the evident sacrifice entailed in home defense. One reason for this was the need to maintain a fairly large force, approximately 200 aircraft, to meet Allied pressure in the Nancy-Metz sector. There is no indication of appreciable fighter activity in the Aachen-Maastricht area during the period under review.

Allied losses through interception by fighters were comparatively small and were confined to 1 day, 21 September. In the main, enemy fighters were used initially in attempts to attack gliders and trans-

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ports but concentrated later upon the strafing of gliders and landed troops in an effort to prevent their successful deployment.

Night bomber operations were carried out on only 2 nights, the 18th and 19th (D plus 1 and D plus 2), with 50 and 100 sorties respectively. The targets were along the Escaut Canal and at Eindhoven. Weather was doubtless the deciding factor in limiting these efforts.

Night fighters were out in strength only on the second night (18/19), on free-lance patrol over Holland, evidently anticipating the dropping of reinforcements and supplies by night. There is no evidence that they were employed on ground-strafing operations either by day or by night.

An unusual feature was the use of a small number of twin-engine fighters on night reconnaissance of the southern North Sea. Presumably the purpose of this was to obtain early information of any attempt to supplement the air landings by a seaborne invasion of the Netherlands islands.

Details of Enemy Daylight Air Operations

Single-engine fighters.—Not more than 50 fighters were put up on D-day against the airborne landings. On D plus 1 this had increased to 100–125 sorties, but this effort was not exceeded until 23 September (D plus 6), when an estimated 150–200 sorties were flown over Holland. By this time the further reinforcements from central Germany had begun to participate. It is not thought that they were engaged in strength before the 23d. Of the fighters initially available in the west, approximately two-thirds operated against the airborne landings and the remainder on the Nancy-Metz front. The Aachen sector appears to have been temporarily deprived of air cooperation. At the end of the period about 600 of a total of 800 fighters located in western Germany were available for operations in the region of the airborne landings. Serviceability is unlikely to have exceeded 60 per cent, and the theoretical figure of fighters ready to operate against airborne troops and transports would therefore be on the scale of 300; but it appears that at the peak effort not even one sortie per available aircraft was achieved. It is possible that these estimates are low, because of the GAF's custom of operating when no Allied fighters are about and consequently no sighting reports are received, and also because in bad weather a number of abortive flights may have been made of which we have no evidence. In the absence of comprehensive reports from Allied ground troops, exact assessment is difficult, but there is no reason to believe that the estimates given here were appreciably exceeded. In any case, hampered by fuel difficulties, lack of large numbers of trained pilots, and inadequate servicing facilities at its operating bases, it is not surprising that the Luftwaffe has repeatedly failed to live up to its hypothetical capabilities.

Altogether, the German fighter reaction was very close to the 100–150 sorties forecast as the average to be expected over a period of 3 days following the actual landings.

Fighter-bombers.—There was only slight evidence of fighter-bomber and mortar aircraft operations during the period. Some fighter units could have been temporarily adapted to this purpose, thus accounting for part of the single-engine fighter effort. A fair estimate of the number of aircraft so used is 60–70, giving a scale of about 30 sorties a day. There is no evidence of fighter-bomber activities by jet-propelled Me 262's.

Reconnaissance.—It is estimated that 5–10 reconnaissance sorties were flown daily over Holland, which can be considered a normal reaction. The main area of interest was along the Eindhoven-Nijmegen-Arnhem route, with some penetration into the rearward zones, the Beeringen bridgehead and southward.

Twin-engine fighters and bombers.—As expected, there were no operations by these types of aircraft by day.

Details of Enemy Night Air Operations

Night activity was generally small, for which the weather can be held mainly accountable.

Twin-engine bombers.—Operations were identified on only 2 nights out of the 7, namely, 18–19 and 19–20. On the 18th about 50 sorties were flown and bombs were dropped in the Escaut Canal sector. Whether this was directed against the airborne landings is not clear, for the area of attack lay well to the west of the main landing zones. As these bombers had been idle for the preceding 2 weeks, it is reasonable to suppose that their sudden reappearance was a direct result of the landings. The following night about 100 bombers operated, the main target being Eindhoven. If further attacks were planned, they were probably canceled due to the weather.

Twin-engine night fighters.—On 18 September (D plus 1), 50–75 twin-engine fighters were out on free-lance patrol over Holland. Unquestionably they were expecting the dropping of reinforcements and supplies by night. This type of activity soon ceased, and there is nothing to show that night fighters were again specifically detailed to guard against the landings. It is also to be noted that no evidence appeared of ground-strafing of troops by night, as had been done in emergency by German night fighters in Normandy.

Fighter-bombers.—There were no accounts of night operations by night fighter-bombers, nor of ground-strafing by single-engine night fighters.

Night ground-attack bombers.—Evidence is at hand that the Ju 87 (Stuka) night bombers operated on a small scale (10–20 sorties) on 18 and 19 September, not in the landing areas but in the Aachen-Maastricht vicinity. It is possible that a very small number cooperated with the twin-engine bombers' attack on Eindhoven on the night of the 18–19, and they may also have been active as nuisance raiders on other occasions.

Reconnaissance.—From the night of the 18th onward, from two to four twin-engine night fighters were out on reconnaissance over the southern North Sea and seaward approaches to the Netherland islands. Their most likely task was to detect and report any signs of seaborne operations in cooperation with the troops landed from the air.

Conclusion

The GAF reaction to the airborne landings proved once again the enemy's inability to produce an effort at all commensurate with the number of aircraft at his disposal. It seems clear that the many difficulties of lack of fuel and trained crews, and of inadequate airfields, had been too much for him, even when faced with one of the most serious threats he had had to counter. The cooperation given by the Luftwaffe to the enemy ground troops, either in intercepting transports and gliders en route, or in dealing with troops already landed, was small. Its part in combating the Allied airborne landings was a minor one, was largely ineffective, and contributed little to the outcome.

Statistics

The following tabulation gives a graphic picture of the statistics of the operation, covering the period 17 September–26 September inclusive:[1]

	Dispatched	Successful	Lost	E/A Claims[1]	Casualties	Dropped or landed			
						Troops	Vehicles	Artillery weapons	Equipment & Supplies (tons)
IX TCC	A/c 4,242	3, 880	98	------	------	------	------	------	------
	G 1,899	1, 635	137	------	454	30, 481	1, 001	463	3, 559
38 and 46 Gps	A/c 1,340	1, 200	55	------	------	------	------	------	------
	G 699	627	2	------	294	4, 395	926	105	1, 668
8 AF	4,269	3, 943	58	139	87	------	------	------	------
9 AF	501	385	2	------	2	------	------	------	------
2 TAF	898	860	13	15	[3] 13	(4)	(4)	(4)	(4)
ADGB	1,746	1, 677	12	5	12	(4)	(4)	(4)	(4)
Totals	A/c 12,996	11, 945	238	------	------	------	------	------	------
	G 2,598	2, 262	139	159	862	34, 876	1, 927	568	[5] 5,227

[1] A/c destroyed only.
[2] Includes resupply operation by 8 AF. 2d Div.
[3] Estimated minimum.
[4] British figures do not include 392 A/c dispatched to target area on D-day morning and the night preceding. 2 of these A/c were lost.
[5] Includes gasoline.

Figures alone cannot reflect the collateral costs of the operation, which must be considered in terms of several factors. For example, while the airborne and troop carrier troops involved would have had to be used on any operation of similar size, the use of virtually all the FAAA resources for this operation dissipated a serious threat against which the Germans had had to be continually on guard. Thus one cost was the sacrifice of this menace to enemy plans.

Stand-by status and operational use of IX TCC aircraft for these airborne landings, together with their planned predecessors, which in each case called for marshaling and complete immobilization of IX TCC, further complicated a ticklish supply situation by cutting out much of the available air supply to the Continent. CATOR, which handled over-all air supply through a priority control office, arranged to supply by C–47's some 20,000 tons to the Continent during September. Had the airborne operations not been contemplated, CATOR

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[1] Photo and weather reconnaissance not included.

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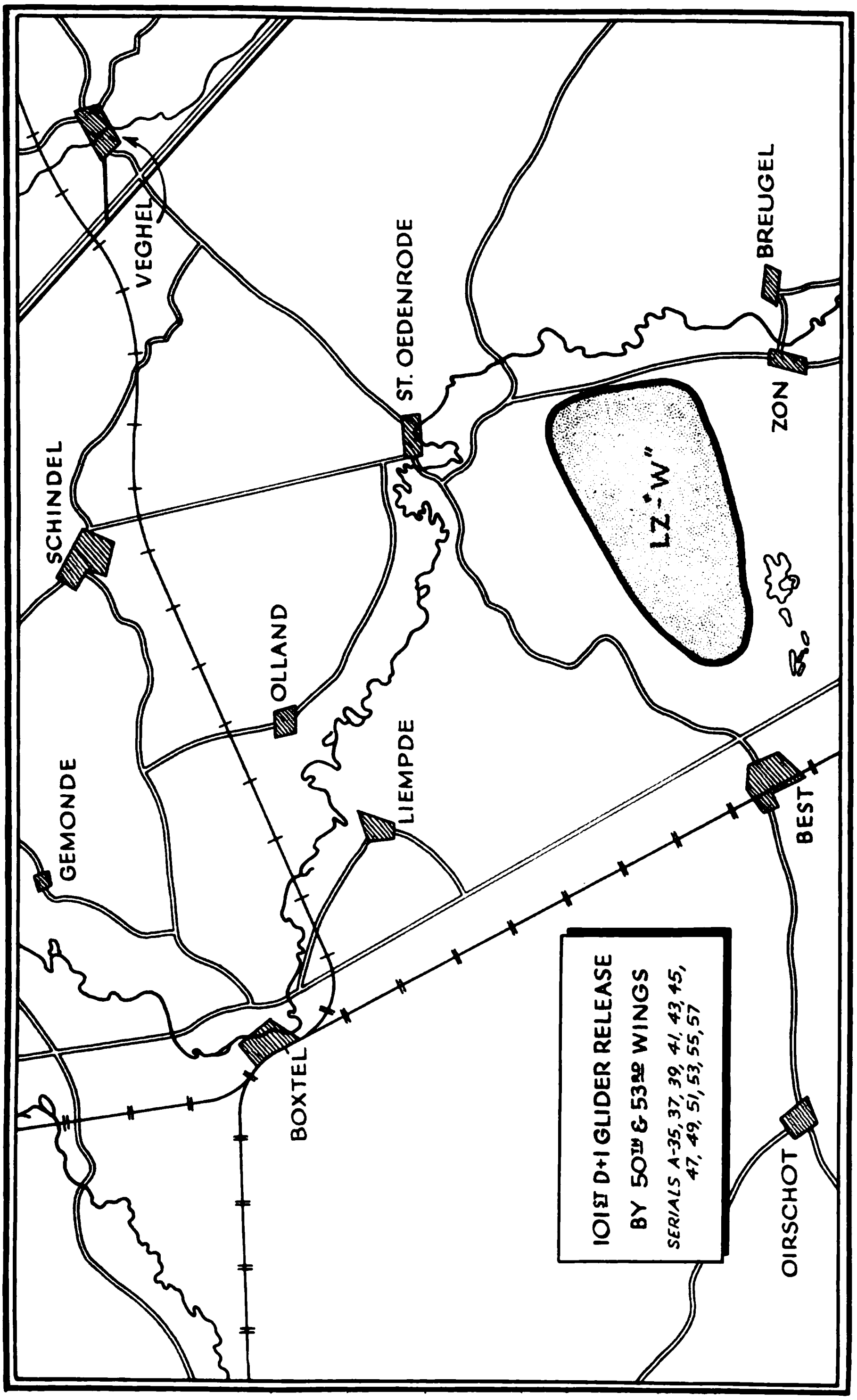
101ST D+1 GLIDER RELEASE
BY 50TH & 53RD WINGS
SERIALS A-35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57
VEGHEL
ST. OEDENRODE
BREUGEL
SCHINDEL
ZON
LZ "W"
OLLAND
LIEMPDE
GEMONDE
BEST
BOXTEL
OIRSCHOT

estimated that, considering existing limitations in weather restrictions, inadequate airfields, loading facilities, scarcity of aviation gasoline, etc., 45,000 tons could have been delivered, of which 25,000 tons could have gone to Lt. Gens. Courtney H. Hodges and George S. Patton, Jr. At the time, General Bradley did not desire to resume the offensive until he had a 30,000-ton stockpile, which by sea, rail, and truck was accruing at a rate of only 1,000 tons daily.

While about 250 heavy bombers were used for air supply, the principal cost of heavy bomber missions resulted from the diversion of Eighth Air Force fighters flying escort. Lt. Gen. James H. Doolittle estimates this cost as the equivalent of 6 heavy-bomber missions, of which 4 could have been of major size. Of the 17 missions flown during September, 2 were further reduced in size because of fighter diversion to the airborne landings. Operations of tactical air forces cannot be charged to the airborne assault any more than to other ground activity which might have been conducted in its stead.

Conclusions

Strategic.—Airborne units are most useful in gaining or restoring mobility when armies are in contact.

Mobile reserves should be sufficient to insure exploitation of initial airborne success.

Reserve infantry divisions should be available, and utilized, to replace airborne divisions in combat as rapidly as their replacement can be physically effected.

Employment of airborne units should be based on a maximum exploitation of their capabilities; hence all well conceived airborne operations will involve an acceptance of a calculated risk in view of possible far-reaching results.

Tactical.—Where adequate protection from enemy interceptors can be insured, and where adequate air preparation can be provided to silence hostile flak, daylight airborne operations will suffer combat losses substantially lower than the normal operational losses sustained at night. Further, accuracy of placing airborne troops by daylight is vastly superior.

Against a well-organized army in regions vital to the enemy (e. g., Germany, Manchuria, Korea, Japan), plans for airborne operations should require that all troops and equipment essential to the success of the mission be landed on the initial day. This is especially important under certain climatic conditions, but the rapid concentration of hostile flak which must be anticipated will in any case render later air operations increasingly costly.

Doctrine requiring early relief of airborne units is sound where the enemy is well organized. Air dropping of supplies cannot be relied upon under conditions of uncertain weather and enemy flak concentrations. However, it may be possible to make a deep airborne penetration of vital enemy territory, without expectation of immediate relief, provided:

1. A period of favorable weather can be anticipated.
2. We possess virtually complete air superiority.
3. The entire air effort can be expended to further the operation.[2]
4. Landing fields are seized.
5. Sufficient infantry and light artillery are air-landed at once to defend landing fields out of enemy medium artillery range.

Air Transport.—When tonnage is required for the conduct of decisive ground operations, and in the absence of adequate sea, rail, and road supply, air lift must be employed to supply any needed tonnage. Normally, the cargo should be susceptble to hand loading and should include ammunition, rations, and petroleum products. Trucks should carry ammunition rather than rations or fuel when other circumstances permit, permitting airplanes to take those cargoes better safeguarded by air lift.

Decision as to employment of troop carrier aircraft as between air transport, on the one hand, and airborne training and/or combat, on the other, must be that of the theater commander. Operation of air transport should be under the air commander .

Troop carrier strength, considering the use of troop carrier aircraft for intratheater air transport purposes, cannot be charged in its entirety against theater airborne needs. However, at least one-half the troop carrier cost is normally and permanently chargeable to airborne needs.

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[2] This will no longer be necessarily true when air has the capability of air-landing all essential heavy ground fighting equipment.

Commendations

Eloquent of the enthusiasm which greeted the airborne phase of the advance into Holland are the commendations which were bestowed upon those whose aggressive and intelligent leadership had made the operation possible. On 18 September Gen. H. H. Arnold sent the following message to General Brereton:

"Highly gratified to receive information of success of your command in its initial operation. See decisive role for large-scale airborne operations in future military doctrine. All command and staff echelons congratulated on brilliant planning and execution of your assault."

The next day, 19 September, General Brereton received the following message of congratulation from Gen. Dwight D. Eisenhower:

"The initial major operation of the Allied Airborne Army has already proceeded sufficiently far to confirm the wisdom of the decision to organize all our airborne forces under single command. Individually your divisions have previously exhibited unexcelled skill, courage, and resolution. But the current operation marks the first attempt in warfare to utilize a number of airborne divisions against a single major objective. The perfection of your staff work is demonstrated by the complete coordination between air, ground, and airborne forces, and this coordination has resulted in maximum tactical effect. I congratulate you and your deputy, General Browning, together with all officers and ranks serving under you. Best wishes and good luck for the future to every man of the Allied Airborne Army."

On 1 October General Eisenhower transmitted to General Brereton the following message from Gen. George C. Marshall:

"Dear Brereton: My congratulations and thanks to you, your staff, and your pilots and crews for the courageous and determined manner in which they have carried out their duties in landing and supplying the divisions of the airborne army in Holland. I am requesting General Eisenhower to transmit a message to the United States ground units of the forces which are now engaged in the salient."

Within the First Allied Airborne Army itself there was a strong conviction that the air component had most meritoriously discharged its obligations. Maj. Gen. James M. Gavin, Commanding General 82d Airborne Division, who on 21 October was promoted to the

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rank of major general in recognition of his gallantry and resourcefulness during the operations, wrote as follows to Maj. Gen. Paul L. Williams, Commanding General IX Troop Carrier Command:

"In summary, the Division captured the GRAVE bridge several hours after landing, seized the key terrain between GROESBEEK and NIJMEGEN during the night of D/D plus 1, captured two bridges over the MAAS-WAAL Canal by daylight D plus 1, and captured the big NIJMEGEN bridge on D plus 3. The Division could not have accomplished any one of these missions, nor its complete mission, but for the splendid, whole-hearted cooperation of the IX Troop Carrier Command. The drops and landings were the best in the history of this Division. The courageous performance of the pilots was magnificent and has been the subject of boundless favorable comment by all ground personnel. With all the sincerity at my command I would like to express to you my appreciation and that of every soldier of this Division for the splendid performance of your command."

The Epic Struggle of the First Airborne Division

LONG after many episodes of World War II are forgotten, the desperate stand of the British 1st Airborne Division at Arnhem will be recalled with deep admiration. In the following pages is given the personal account of an American air officer, Lt. Bruce E. Davis, who went through the foredoomed perimeter defense with the soldiers of the 1st Division.

With a few revisions, but without change of meaning, the narrative of Lieutenant Davis is given here.

Report on Arnhem Operation, 18–25 September 1944

Originally, Lt. J. E. Bice and I were ordered to take part in the Arnhem airborne operations as GCI controllers, but this was later canceled, since the air cooperation and night fighters were to be all RAF. W/C Clarence Brown, 38 Group Operations, who was in charge of the two GCI teams, explained that our verbal orders were that we could go in voluntarily, but that we were no longer ordered to do so. In case American fighters were used, and also in the hope of setting up an offensive day fighter control center, I decided to go along. Lieutenant Bice returned to our unit, the 306th Fighter Control Squadron, in France.

On D-day we were ready to go, but our tug planes had not been ordered, and we had to wait until the following day. W/C Brown went ahead with another unit, with instructions to meet him on the LZ east of Nijmegen. We intended to set up on the hills to the east, just across the German border, in the western tip of the Reichswald. W/C Brown, as I have since learned unofficially from several sources, has been killed.

On D plus 1, S/L Coxon, four RAF enlisted men, and I took off from the RAF station at Harwell. As we crossed the western tip of the Netherlands islands, we encountered a heavy flurry of near flak bursts, but no flak hit our glider. About 5 minutes short of our LZ, the one about 5 miles northwest of Arnhem, our tow plane was caught in a terrific concentration of flak and tracer and caught fire. We cut loose and landed in a field in the general vicinity of Zetten, south of the Rhine, about 7 miles southwest of Oosterbeek. The glider pilots reported that our tow plane had crashed and sent a billow of smoke and flame several hundred feet into the air.

Being in German territory, we destroyed our secret beacon by Sten gun fire and joined the parties of two other gliders, who had been forced down in the same field. While the other parties, commanded by Lieutenant Farrell of the British 1st Airborne Division, unloaded two motorcycles, two jeeps, two trailers, and a small antitank gun, I kept saying "Oranje" to Dutch civilians until a major of the underground approached. We decided against setting fire to our gliders for fear of guiding the Germans to our location. The Dutch officer then led us down bylanes, through woods, and behind dikes until we reached a small mechanical ferry northeast of Driel. The Dutchman walked ahead and told the ferry captain to open the gate for us and to be ready to move quickly, since we were under a large concentration of enemy guns. We made a break across 200 yards of open ground. Fortunately, a Fortress was flying overhead, and with all German eyes and guns turned on it we crossed unseen. The B-17 was untouched. In Driel, before crossing, we had cap-

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tured six Germans, but because we were unable to take them with us we had the local civilians put the prisoners in jail and throw their weapons into the river. They were Poles, forced into the German army, and had no fight in them.

Across the river the Dutch civilians had posted themselves at intersections and now directed us to the main body of troops. We got past the railroad station in the western part of Arnhem and were held up by heavy machine-gun fire. Lieutenant Farrell and I knocked out two machine guns with grenades, but we were still unable to go on. By this time it was dark.

Since Lieutenant Farrell wanted to go to the 1st Brigade and I was headed for division headquarters, we separated and I joined Lieutenant Heaps, a Canadian. S/L Coxon took the enlisted men into a building across the road. I had planned to spend the night in the railway station, but Lieutenant Heaps decided to report back to headquarters, so I went with him. We had 11 men crowded on a Bren carrier.

Reaches Division Headquarters

We met quite a bit of machine-gun and rifle fire during the trip. Upon reaching division headquarters we reported to Brigadier Hix. A glider pilot, who had followed our other three gliders down on the LZ, had told me earlier in the evening that the rest of our party had been hit by heavy 88-mm. and machine-gun fire upon landing, and that he thought all had been killed. I reported this to Brigadier Hix and told him it looked doubtful as far as our having night fighters was concerned, but that I would try to get to the LZ the next day and see what could be salvaged. The next morning I got a jeep and started out for the LZ, but I was caught by mortars and pinned down for about half an hour. The jeep was badly hit and lost several gallons of water and gasoline. Therefore I did not expose myself by trying to start it, but crawled a few hundred yards down the ditch until I got back into the heavy woods.

Later that morning I saw S/L Coxon, who had become separated from the four enlisted men, and he gave me a rough idea of where they were. Within an hour I learned they were in danger of being cut off from us, and I had Lieutenant Heaps drive me down. Expecting heavy sniper fire on certain parts of the road, I borrowed a Sten and we started. In a 100-yard stretch we heard the machine pistols of five snipers. I returned the fire, more as a bluff than anything else, but I may have hit one who was covered by thick foliage in a tall tree. At least, he stopped firing.

Eventually we found the men, placed them on the jeep facing in all directions, and started back. We were not fired upon. Upon returning I met Lieutenants Geddes and Johnson, who said they had two "veeps" but needed a VHF expert. So I moved the RAF radio expert, Private Eden, around behind the headquarters building, and he started to work on the radio. I also moved the other three RAF men to the back, since sniper fire had recommenced in front of the building.

That afternoon the mortars started, and from then on the place was under continuous mortar fire. At about 1700, Eden, the enlisted American radio man, Lieutenant Johnson, and I were standing by the jeep, trying to make contact with Allied aircraft, when a mortar barrage came over and a shell landed about 25 yards from us. We dived under the jeep, but both Eden and the American soldier were hit, the American three times in the back, Eden through the jugular vein. I looked at them and called for a stretcher. I knew Eden was finished, for blood was gushing from his throat and mouth.

I thought I had known what it was to be an officer, but I did not know it until then; for Eden, who knew he was finished, but could not talk to me, gave me a look which told me that he completely depended upon me to take care of him. I patted him on the back, telling him I would look after him and he would be all right. He believed me. Lieutenant Johnson was tending the other wounded man, so I stayed with Eden until he became unconscious, although I was utterly powerless to aid him. Then I helped Lieutenant Johnson until the doctor and the stretcher bearers came. We did not even realize until later that several more shells had fallen near us.

The veep had been hit, but two channels were still working, and we finally got in touch with a Spitfire, but the pilot said he could not hear us because of flak. At the end of about 20 minutes he flew away. After that we were unable to reach any more aircraft, although one of us was calling day and night during the next 2 days, calling for "Boxwood" and "any Allied aircraft" and giving our call signs both as 1st Airborne Division and in our radar control station code. Late on the third day the radio was knocked out altogether by an 88-mm. shell.

After that day, Tuesday, the days were all jammed together and I cannot remember which day was which. There was an HF set in the attic at headquarters, directed by a British lieutenant from the headquarters section. The attic was full of chair cushions, with which we padded the radio all around, since the walls and roof were too thin to stop 88-mm. shrapnel. Even so, the radio was knocked out four times by near bursts from 88's and mortars, but the mechanic always managed to keep it going. Lieutenant Geddes and I hoped to hear the voice of someone we recognized and who would recognize us, so that we could get an air cooperation message through without authentication; but we had no luck, although we alternated regularly, one of us on this set and one on the VHF set outside, taking turns with the enlisted men there.

After a day or two, we knew that the walls and roof would never stand the pounding, so we moved the HF set out to the back also, in a dugout. The dugout was hit almost immediately, smashing the set for good. The snipers were everywhere, many of them directing artillery fire by radio. The German artillery, both mortars and 88's, was unbelievably accurate.

On Night Patrol

Since all our radios were out, I asked permission to take my RAF men out on patrol at night; this was refused, since they were not infantry-trained. Having had reserve infantry training myself, I was allowed to go, and I went the next 2 nights. The first night, our patrol helped to put up a bluff Sten gun barrage when the German infantry attacked on our northwestern perimeter. The attack was repulsed, and we spent the rest of the night chasing out snipers who had infiltrated our lines, but the snipers were there in large numbers.

The next night, three of us went after a machine-gun nest and found it about 400 yards from division headquarters. There were six men sitting by it, doing nothing. We threw two grenades and then went back toward camp. On the way back I shot a sniper, who fell about 20 feet out of a tree, landing on his head. I think that was one of the most satisfying sights I have ever seen. He was either careless or overconfident, for he had chosen a tree higher than the others and not very thick with foliage, making a beautiful target. He never even saw me.

The next day I was hit in the foot by mortar shrapnel, and also hurt my hip. I was diving into a dugout when hit and landed on my hip. At first I thought my left leg was broken, but after sitting still a while, I realized that it was just a painful bruise. There was small shrapnel in my foot. Later that day I learned that my RAF personnel were hit in that barrage, two of them killed instantly and the third, Corporal Austin, badly wounded in the back and head. He was taken to the hospital in Arnhem, which was in German hands. I looked for him in the first aid post at division headquarters, but he had been taken away. Lieutenant Geddes was there on a stretcher, having been hit in the back and right arm during the same barrage. The doctor said he would have no trouble should he get surgery soon, but, with the hospital in German hands, early surgery was doubtful. He was a brave little guy, and I certainly hope he will be all right.

After I was hit, I was very slow and could not make the trip around the yard as often as I had before. After learning my responsibilities from Eden, I went around to all the foxholes at the back and did what I could for the enlisted men. I spread any good news that came in; there was constant news of reinforcements across the river. It began to sound as if one-half the British army were there, and I think I must have promised the men an armored division for breakfast four mornings in a row. It wasn't all wasted effort, because while I was trying to cheer them up I was having them dig themselves in deeper.

I tried one trip during the day after that, but I was so slow it would have been suicidal to continue, so I told the men I would come around at night. These were British soldiers whose officers had been killed and much of whose equipment had been destroyed.

After wrenching my leg again I was moved into headquarters to stay, so from then on all I could do was to man a Sten gun from one of the windows. Having been expecting an infantry attack on division headquarters, we had nine men manning the window arches

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under the stone veranda, to prevent the enemy from throwing grenades into the operations room. The attack never came, but we thought a thousand times that it had.

The night before we left, some Netherlands Red Cross workers came with the offer of negotiating a short truce to evacuate the wounded of both armies to the hospital at Arnhem. This was arranged and I was evacuated with them. My leg was worse than ever and I knew I was too slow to be of any use in a moving battle. (We expected to move south, nearer the river.) I had made many friends in the division, and I knew that in case of withdrawal they would look after me and thus slow themselves down. The odds were too great.

So I went in to evacuate, in effect to surrender. But I didn't do it and shall probably never know why. Somehow I felt I was letting my buddies down. Since I was the only Yank around headquarters (Lieutenant Johnson was ferrying Poles across the river) I was letting my own army down. So I climbed back through the window, made everybody agree that if we had to retire southward it was every man for himself, and stayed. This was probably the luckiest decision I ever made.

After reading this report, which seems to have degenerated into a blood-and-thunder novel, I want to interject one thing before telling of the last night. I am not trying to sound courageous, for courage was commonplace and heroism was the rule. God knows I was badly scared a good deal of the time.

I learned this from the Arnhem operation: that men, born and bred as freemen, have a great strength and will power which they distrust until they need it. I saw men who were hungry, exhausted, hopelessly outnumbered, men who by all the rules of warfare should have gladly surrendered to have it all over with, who were shelled until they were helpless psychopathics; and through it all they laughed, sang, and died, and kept fighting because they were told this battle would shorten the war considerably.

The greatest tribute that I think could be paid to the 1st Airborne Division was paid by a German prisoner, a major, the old Prussian type of officer, who saw service in the last war and in this one. The prisoners were in a cage about 200 yards from division headquarters. They were complaining that they were not getting enough food. At that, they were getting more than we were, and they could sleep.

The major called them together and dressed them down severely, concluding with something like this:

"These men have stood up under the most terrible artillery bombardment I have ever seen. They have fought on without food or sleep for several days. Even though they are our enemies, I never saw braver men. When you complain you make me feel ashamed of our being German. I suggest that you be quiet and follow their example."

This speech was overheard by several reliable officers who understand German, and they have sworn that it is true and not another of those rumors.

But to get back to the last day.

Word of Evacuation

That morning we had our usual mortar barrage. Between 0720 and 0805 we counted 133 shells exploding near division headquarters. This was not an unusual number; we just happened to count that morning for want of anything better to do. About 1500 we heard the news that we were evacuating that night. Then we got the news that there were 100 Germans, infantry with machine guns, in the woods to the south, between us and the river. We thought they must know our plans.

We called on the 43d Division artillery, south of the river, and they shelled the woods heavily 3 times before dark and once after dark. The waiting from 1500 to 2200 was nerve-wracking. I thought I might have to swim, and I knew my injured leg would make that difficult, so I took off my combat pants, canteen, and everything I could spare, and destroyed them. I burned the confidential authentification document and used the ashes to blacken my face and hands. The edge of our perimeter had been bombed and strafed by Marauders, Thunderbolts, and Typhoons, and we hoped it would look as if were going to attack. A rocket-firing Typhoon hit the Nebelwerfer mortar which had been giving us the most trouble and reported, "All rockets on target." This gun was the six-barrel type, and after it was hit the shelling became much lighter.

We divided into groups of 10 and were to leave division headquarters at 15-minute intervals. I was in the party of Maj. Gen. R.

E. Urquhart, Commanding General of the division, and our party was to leave at 2215 hours, with the first group departing at 2145 hours.

A mortar shelling started about 2100. The Germans usually did not shell at night, and we thought again that they knew what we were up to, but at 2135 the shelling stopped. General Urquhart filled a cup with whiskey and we all took a sip. The glider pilots' chaplain came in and prayed and led us all in the Lord's Prayer.

The first two parties moved out. Colonel Preston asked me how I thought my foot would hold up. I told him that as soon as I got excited I'd forget I had a foot. Moving outside, we sat in slit trenches to accustom our eyes to the darkness. Our orders were not to return fire unless so ordered by our party leader. I took one last look at division headquarters and the surrounding grounds. I have never seen such a vista of destruction, not even in Montebourg and Valognes, for there everything had been cleanly bombed and there were no woods around. At division headquarters, the grounds and surrounding works were shredded. Large trees had been cut up until they were only tall, bare sticks. The smell of gunpowder was everywhere. The big, four-story house was a shambles. Part of the roof was blown in; there wasn't a window in the place, nor had there been for days; the walls were torn out in several places; and the dead were everywhere. From the first we had been unable to bury the dead.

We walked along a road behind hedges until we reached an open field commanded by an enemy machine gun. As we crawled, a very bright light went up, but apparently we were unobserved. We moved on into the woods again. As we stopped to rest and squatted down, the man behind me pitched forward on his face. I thought he had seen something, so I hit the dirt too. Then I rolled him over and saw that he was dead. He was the 14th man to be killed within a few feet of me, the others by mortar fire.

We got through to the river plain and crossed another bad stretch of about 200 yards. The dead and dying were everywhere. We reached the river bank and lay down in the mud to wait for our turn in the barges, of which there were 5, holding 12 men each. By this time it was raining, which helped, since it reduced visibility. We held about 500 yards of the north bank and the 43d Division about 600 yards of the south bank. The barges kept crossing back and forth. General Urquhart had the wounded taken across first; then his party got aboard. And then the last straw—the darned engine wouldn't start, and the current was too swift to paddle across. After much struggling and swearing, the engine finally started, and we got across unmolested.

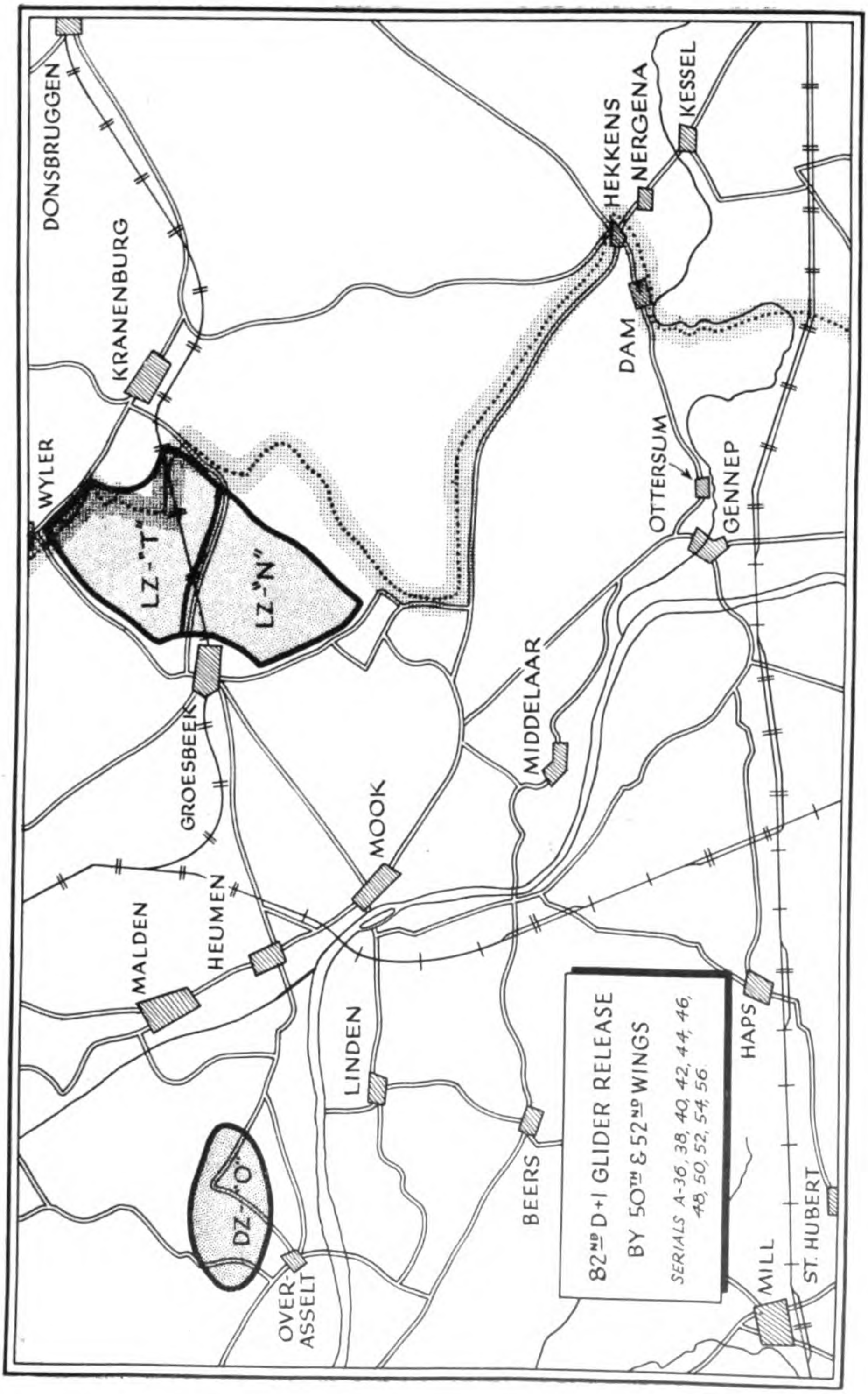
We walked about 3½ miles to a place where a rest point had been set up. There we were given hot tea, biscuits, rum, and cigarettes; but something had gone wrong—we could eat and drink very little, but we couldn't smoke enough to satisfy us. Our nerves were still in knots. We were moved another 2 miles in "ducks," had more tea and biscuits, then were moved by truck to Nijmegen, where we had a marvelous hot meal, dozens of cigarettes, and all the liquor we could drink. But we still had trouble getting food and drink down. We pulled off our muddy clothes and went to bed.

That night and the following night we had a few bombs, but nothing serious. In Nijmegen we found S/L Wheeler and F/L Richards, who we though had been killed on the LZ. They told me that F/L Tisshon and the other 16 men had been missing since they landed. Wheeler and Richards had carried their secret beacon for several days, then had destroyed it.

The next day, Wednesday, S/L Coxon arranged with W/C Barnard for us to ride to Eindhoven in the wing commander's jeep. At Eindhoven, arrangements were made for us to ride in a C-47 to Brussels, and at Brussels I was booked on a C-47 to Croydon. I came with Lieutenant Colonel Preston of the 1st Airborne Division, Guy Byum, a BBC correspondent who had been with us at Arnhem, and several other people.

All through the operation the Luftwaffe was active, but it was a very peculiar activity. The FW 190's and Me 109's were over every day except two, and their tactics were always the same. They would sweep back and forth at about 4,000 feet, drop to 2,000 feet, and then peel off as if to strafe us. But I doubt that they fired more than 500 rounds in all the passes they made at us. It looked as if they were afraid to use their ammunition and then be unarmed if our fighters came, and as if they were simply trying to boost German morale.

What must have shaken enemy morale was the guts of our resupply plane crews. Day after day they would wade in at 800 to 900 feet,



82ND D+1 GLIDER RELEASE BY 50TH & 52ND WINGS

SERIALS A-36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56 right through a terrible flak barrage. The only day on which flak was not heavy was when P-47's flew escort, and most of the ack-ack did not open up for fear of being spotted and strafed.

Praises Resupply Airmen

On Tuesday or Wednesday—I am not sure which—I saw three planes receive hits and catch fire, and the pilots, instead of saving themselves, calmly circled again, dropped their cargoes, and crashed in flames. I can find no words to express the admiration we have for those resupply men. Thinking of them, I feel a great pride at just being a member of the same Allied team. Now that the excitement of battle has faded away, it seems impossible to believe that men could have such devotion to their comrades, that they would endure such hell in an effort to take care of us. A Polish captain, a liaison officer between division headquarters and the 4th Landing Brigade, spoke the truth when he said, "There isn't a man flying resupply who doesn't deserve the V. C."

Division's internal communications were a miracle. How the signal section kept their radios and their telephone lines in will probably never be known, but it was nothing less than miraculous. I do know that they suffered heavy casualties in doing so. The Arnhem operation was a series of constant crises, and if communications had been knocked out for as much as 2 hours of the entire siege we should have been lost.

The medical corps, as usual, continued to go and get the wounded no matter how heavy the barrage. The Germans respected the Red Cross flag every time an evacuation party went out, but of course there were no Red Cross flags during the barrages. The medics simply went out after the wounded and took them in, shelling or no shelling.

The infantry absorbed everything—mortars, tanks, SP guns, machine guns, everything in the book, and kept coming up for more. The German artillery and armor were under command of SS troops and were sturdy. But the German infantry, except for its backbone of SS troops, was scared of the Red Caps and would not attack without the help of armor or SP guns. Four of us were once fired upon by machine guns one-half mile away. There was no chance of hitting us; it was just fright. Another time I heard a Spandau burst which lasted almost 30 seconds, and a man who fires a Spandau with as much as a 5-second burst is simply scared or he would not freeze the trigger that long. There was constant evidence that the attack had given Jerry the scare of his life. The amazing thing about the British infantry was that they carried on with the light-hearted abandon of a Sunday school class on the first spring picnic.

I would like to make a few suggestions based upon my own observation of the airborne operation:

1. There was apparently a lack of liaison between the air cooperation party and the air cooperation itself. Whether this was due to improper crystal frequencies, lack of aircraft, or some other cause I do not know. This should be taken care of well in advance of an operation. Lieutenant Geddes told me he received his frequencies the night before D-day. This should be definitely settled in time to install the crystals and fuses and test the radios.

2. All officers and enlisted men should be completely combat-trained before being sent out on such missions.

3. Radio crews should be thoroughly trained. After our two radio men were hit, nobody knew the job. We borrowed a man from the British 1st Airborne Division, but he also was hit.

4. A layer of armor plating, easily removable for speedy maintenance, should surround the radio set.

5. A jump set might be the solution to a lot of radio trouble. Against this must be weighed the mobility of the present veep.

A point for all operations is this: an air cooperation party must know beforehand where the ground forces intend to set up their defenses, so that the most favorable site may be preselected. In the Arnhem case, there was no place inside the perimeter outside the range of enemy guns, but with a larger perimeter such a site might have been obtainable. I do not know whether this was prearranged with the air cooperation party, but I mention it because we of the radar party were not given this information and, had we gone in on D-day and set up as we planned, we would have been in enemy territory in a few hours.

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Air-Ground TEAMWORK on the Western Front

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Wings at War Series, No. 5 [redacted]

Air-Ground Teamwork
on the
Western Front

The Role of the XIX Tactical Air Command
during August 1944

An Interim Report

Published by Headquarters, Army Air Forces
Washington, D. C.

Office of Assistant Chief of Air Staff, Intelligence

FOREWORD

THIS is the fifth in a series of interim reports published by Headquarters, Army Air Forces. It was compiled from accounts prepared by the Historian and the Public Relations staff, Ninth Air Force, written on the basis of official records and firsthand observation. These accounts have been abridged and edited in order to provide for combat personnel in all theaters a succinct summary of the planning and execution of the XIX Tactical Air Command's participation in the Western Front activities during the month of August 1944.

The conscientious and able work of staff personnel in the theaters makes possible the publication of this series, the intent of which is to cover the more important campaigns and missions in all theaters of operations.

Comments and criticism are invited. They should be addressed to The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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Official Photo USAAF.

Maj. Gen. O. P. Weyland, Commanding General XIX Tactical Air Command.

Air-Ground Teamwork on the Western Front

WHEN the history of this war is written, one of the significant developments to be noted and discussed will be the formation and rapid growth of the air-ground tactical team. Born of resourcefulness and necessity, cradled in the African desert, the lusty infant quickly grew into a creature of bone and sinew until, when Normandy was invaded, it had become a smoothly functioning striking force of terrific power, destined to change many tactical theories theretofore accepted as axioms. This booklet focuses its attention upon one phase of air-ground cooperation, the drive across France of Maj. Gen. O. P. Weyland's XIX Tactical Air Command (XIX TAC) and Gen. George S. Patton's Third Army.

For 30 days this new battle team moved ahead without pause—eastward, southward, and westward. Six days after it went into operation, all Brittany had been conquered except for three beleaguered ports; 9 days later, one jaw of the Falaise-Argentan trap had been clamped shut; in another week the Seine was crossed above and below Paris; and by the end of the first month this air-ground combination was fighting within 60 miles of Germany.

In the course of these incredibly rapid operations XIX TAC was called upon to carry out many assignments that no air arm had ever done before. To keep up with the advance of Third Army's forward command post, frequently 20 miles a day, XIX TAC had to move its combat headquarters five times during the 31 days of August. It was an air force that never could settle down, that always must keep trucks and vans ready to roll closer to the front, that never could permit a time lag in its operational planning and coordination.

In August, Thunderbolts and Mustangs of XIX TAC flew on five different fronts, none of which was stable. The fighters probed and disorganized with their bombs deep areas of enemy concentrations and shallow zones directly ahead of Third Army tanks; they protected the Third Army's rearward supply roads, at one time very narrow and precarious, from ground attack and sabotage aircraft; they flew almost daily against suicide garrisons which the Germans left behind in encircled, sternly defended harbor cities; and finally, in a completely unorthodox move, they were given full responsibility for the protection of General Patton's long, vulnerable right flank along the Loire.

This diversity of assignment meant that the aircraft of XIX TAC had to operate simultaneously along an irregular, shifting 500-mile front ranging from Brest almost to the Rhine. Dozens of high-priority missions were required on every good flying day to meet threats along the whole uneven battle line, to keep the Germans in every sector immobile and off balance, and to prevent any massing of enemy strength to oppose the Third Army.

Background of the XIX Tactical Air Command

By 1 August most elements of General Weyland's command had fought the enemy for at least 5 months, and some had been in combat since December. XIX TAC joined the Third Army with a backlog of combat experience in all three of its tactical assignments: neutralization of enemy air power; interdiction of enemy movement on roads, rails, and rivers to and from the battle zone; and close cooperation with ground forces.

General Weyland took command of XIX TAC, then one of the two components of IX Fighter Command, on 4 February 1944. His first headquarters was at Aldermaston Court, near Reading in Berkshire, from where he directed the administration and helped to plot the operations of Thunderbolts and Mustangs flying from East Anglian bases with Eighth Air Force Fortresses and Liberators. Soon after its activation XIX TAC consisted of two fighter wings, the 100th and 303d, embracing five groups of Thunderbolts and two of Mustangs.

Gradually the aircraft of IX Fighter Command shifted from long-distance escort missions, protecting the heavies against the Luftwaffe, to fighter-bomber operations against all types of enemy defensive and logistic targets in northern France, the Lowlands, and within the borders of the Reich. As invasion drew close, General Weyland's seven groups moved to advanced landing strips in Kent, a few minutes' flying time from the enemy, the better to carry out their part in the softening of the German garrison armies in France.

In the weeks of furious air warfare before D-day, XIX TAC's operations were coordinated with those of its sister organization, IX Tactical Air Command, under Maj. Gen. Elwood R. Quesada. XIX TAC participated in the preinvasion rail- and road-smashing campaigns and helped to destroy bridges across the Seine, the Meuse, and the Oise to divide from each other all possible invasion sectors and to make transportation from the big German weapons and matériel factories to the Westwall difficult and perilous. To take one obvious example, the destruction of all bridges across the Seine from Paris to the sea separated the German Seventh Army in Brittany and Normandy from the enemy Fifteenth Army in the Pas de Calais.

Fighter-bomber pilots, learning their trade the hard way during April and May, returned to base each day with new techniques for sealing tunnels, blowing up bridges, blocking tracks, and derailing railway cars. They approached their targets from a dozen different angles, ranging from a horizontal, almost zero-degree bomb run, to the nearly perpendicular approach of straight dive bombing. Their record of enemy vehicles destroyed and rails severed ran into impressive figures.

From D-day to 1 August, when the First Army was the only American army operating in France, XIX TAC groups, based first in England, then in Normandy, were under operational control of IX TAC. General Weyland's airmen participated in all the close cooperation missions of those first 2 invasion months—the 3-, 4-, and 5-missions-a-day schedule of the assault stage; the interdiction of traffic across the Loire and through the Paris-Orléans gap; the harrying of enemy movement inside Normandy and Brittany; the concentrated 2-hour bomber and fighter-bomber attack on the pyramidal forts ringing Cherbourg; and the historic operations south of St. Lô.

On 2 July General Weyland's field headquarters were set up at Cricqueville in Normandy. A few days later he moved to Nehou, near the secret command post of the still secret Third Army. Until 1 August, while XIX TAC's Thunderbolts and Mustangs continued to fly in cooperation with the First Army, the operations and intelligence personnel of XIX TAC and Third Army made plans for their independent air-ground campaign, to start with the activation of General Patton's forces.

Background of the Third Army

The Third Army had been in Germany before. Its shoulder patch, a white "A" and red "O" on a field of blue, proclaimed months spent in the Reich after the last war as the army of occupation. From the outset, General Patton made no secret of the fact that the Third Army would again go to Germany.

He had taken command of the army in England on 26 March 1944. Until 6 July he directed a rigorous training program, emphasizing the physical fitness of his men, aircraft recognition, firing of individual and combined weapons, and familiarity with mines, minefields, and booby traps.

On 6 July General Patton established headquarters at Nehou in Normandy. Under his command were four corps, the VIII, XII, XV, and XX. When the Third Army became operational on 1 August it had three immediate objectives: to drive south and southwest from Avranches, to secure the area around Rennes and Fougères, and then to wheel westward to capture the peninsula of Brittany and open the Breton ports.

First Phase of the Operation

The front on 1 August.—On 1 August American armor and infantry were smashing forward on the impetus of the break-through at St. Lô. The surge of five armored columns cut the Germans to ribbons. Dozens of powerless, unequipped, and disorganized enemy units were scrambling southward and eastward to escape annihilation. Fighters of the XIX and IX TAC hunted the foe on the roads, where they moved two and three trucks abreast without discipline in planless escape; in the undergrowth in valleys and stream beds, where Panther and Tiger tanks and isolated artillery sought refuge; in bivouac areas, where Germans pitched their oblong tents for a few hours' respite in their headlong flight.

This sudden rout followed the massive air operation of 25 July, which helped to break the month-old deadlock along the base of the Cotentin peninsula. From the capture of Cherbourg until

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that date, Americans and Germans had fought obdurately around St. Lô, Périers, and Lessay. When the shattering aerial attack finally came, the massed weight of American heavy, medium, light, and fighter-bombers, about 3,000 strong, saturated German antiarmor defenses with thousands of small bombs, each with a lethal radius of 100 yards. After that the enemy lines were numbed, dislocated, shredded. The First Army sprang forward before the Germans could recover their balance. In a week the Army reached Avranches. Its cooperating air power stopped hundreds of tanks and vehicles along the roads, throwing into confusion seven nervously withdrawing divisions. At Avranches, on 1 August, the Third Army entered the fight.

Five days—for Brittany.—General Patton's first request to XIX TAC was a strange one: *Do not blow up any bridges.*

Since long before D-day tactical aircraft had concentrated on bridge-busting, a very effective way of slowing German movement. General Patton looked at it another way. He wanted the bridges intact so that his own troops could cross the rivers without delay, without having to ford them, or to throw up ponton bridges. He counted on swift advance—and made it. Within 5 days all Brittany except Brest, St. Malo, Ile de Cézembre, and Lorient were in American hands.

The very speed of Third Army movement changed the whole character of fighter-bomber cooperation. Before the break-through, the highest priority assignment for Thunderbolts, Mustangs, and Lightnings had been the isolation of the battlefield from the south, east, and north. That assignment presupposed that advance would be slow and tortuous, that it was advantageous to demolish permanent road and river structures like bridges, embankments, and overpasses to stop the enemy from flooding the battle zone with troops and supplies. When General Patton started moving, he turned the interdiction job inside out. The Third Army wanted fighter-bombers to prevent movement from, not to, the battle area. It wanted the German escape roads blocked, but it also wanted lines of communication ahead of our troops as smooth and fluid as possible.

Before the big air blow of 25 July, the second highest priority

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assignment for air, as the First Army fought stubbornly from hill to hill and patiently stormed strong points, had been to attack enemy defensive positions which had held out for days and might continue for weeks. Thunderbolts would plan, 24 to 48 hours in advance, to dive-bomb a stubborn machine gun position or a fort impregnable from the ground.

In XIX TAC-Third Army tactics, the second job also was reversed. There were no such things as German "strong points" in Brittany short of the great island and port fortresses. Over the open country of the peninsula the Germans rarely paused long enough to make a stand on Hill X or Ridge Y. It became impossible to plan tactical air cooperation missions a day in advance when Third Army tanks rolled ahead 20 miles a day and when aircraft had to make sure, before an attack, that the objective had not already been taken by our ground forces. It soon became clear that in cooperating with General Patton, XIX TAC would find its targets in the field, would plan as it flew.

To cut off enemy lines of retreat, to destroy German tanks and infantry in flight, to eliminate pockets of resistance and delaying action, General Weyland planned and dispatched two extremely flexible types of missions which depended heavily upon the acuteness and resourcefulness of his individual airmen.

One was *armed reconnaissance*. In these operations, fighter-bombers armed with bombs and bullets ransack deep and shallow zones ahead of the ground forces for targets of opportunity. The field for armed reconnaissance is bounded on the inside by the bomb line, a series of marked terrain features, beyond which all territory is definitely held by the enemy. With General Patton's amazingly swift ground advance, the bomb line moved hour by hour and pilots carried area maps strapped to their legs so that they could be alerted about changes as they were made. In the campaign for Brittany and after, XIX TAC armed reconnaissance missions paid juicy dividends in locating and breaking up masses of enemy strength behind the battle line, in knocking out enemy tanks and vehicles approaching or fleeing the front, and in giving the Germans no leisure to rest, regroup, or maintain secrecy of movement.

The second type of mission was *armored-column cooperation.*

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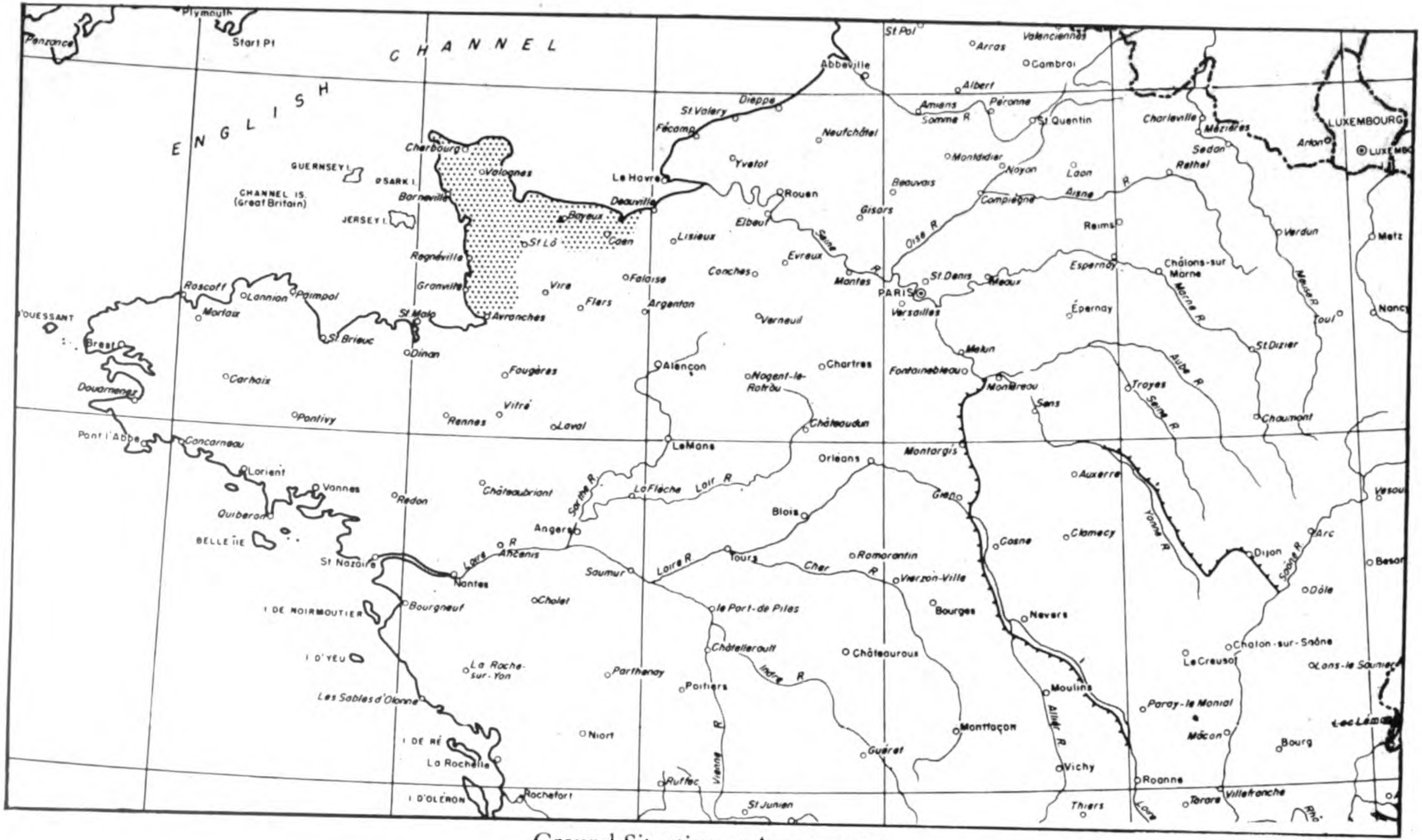

Ground Situation, 1 August 1944

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Before the St. Lô break-through, between 10 and 14 tanks in every division were equipped with the same VHF radio sets carried by the fighters. Four- and eight-ship flights hovered over the lead elements of armored columns, ready to attack on request, to warn the tanks of hidden opposition, to eliminate delaying actions. These flights never returned to base until new flights came to relieve them. With this airplane cover always present, and as close by as fighters escorting heavy bombers, obstacles which might have taken hours to surmount were eliminated in a few minutes. Before St. Lô, a most important precaution was taken. All American vehicles had fresh white stars painted on them, and were given cerise and yellow panels to identify them to friendly aircraft. In a war which saw American and hostile tanks deep within each other's lines, these measures saved many lives.

On 1 August XIX TAC had operational control of three groups of Thunderbolts. As General Patton's tanks plunged forward south of Avranches, the first air operations order assigned two groups to cover the progress of two armored divisions. The third group was ordered to fly armed reconnaissance deep into Brittany, over the broad fields where Third Army tanks would soon strike.

The P-47's could not take off until late afternoon, but they flew 10 separate missions in the few hours remaining before darkness. The first day's bag was miscellaneous. Spotting the muzzles of AAA guns in some harmless-looking hay wagons, the Thunderbolt pilots blasted them to bits. Another flight knocked out three 88-millimeter fieldpieces in the path of the 6th Armored Division, and a third plastered a field bristling with enemy gun positions. The armed reconnaissance aircraft cut 3 railway lines, destroyed 22 motor vehicles and 2 armored cars, and raked a busy marshalling yard and a fuel dump. Statistically, it was an inauspicious beginning for the new air cooperation arm, but that was because the planes were grounded throughout most of the day.

In the next 4 days General Patton's armored columns penetrated and secured all Brittany except the heavily fortified ports. Intermittent bad weather kept many aircraft on the ground, but XIX TAC was growing to full strength and daily flew missions which materially helped the Army's progress. Two more P-47 groups and one P-51 group joined General Weyland's forces before 5 August, and after only 3 days at its camp site XIX TAC headquarters again moved nearer the battle line, this time to Beauchamps, east of Granville.

General Patton's tactics developed explosively and intricately. General Weyland had to spread his flying strength thinly, cover new and vast areas every day, make maximum use of every fighter-bomber. Broadly, the air-ground warfare in the first days of August broke into three phases.

First, three Third Army columns were cutting into Brittany along parallel lines. All required constant armored-column cover during good flying hours. The spearheads in southern and central Brittany occasionally ran into dangerous tank concentrations or the cross fire of heavy guns, often met masses of enemy troops in bivouac areas or defensive deployments. The northernmost Third Army column, Brig. Gen. Herbert L. Ernest's armored task force, soon reached the concrete pillboxes ringing St. Malo and had to face fire both from powerful ground batteries and from warships in St. Malo Harbor.

Simultaneously, XV and later XX Corps fought southeastward from Fougères, in a move which started as protection for the rear of the Brittany-bound columns and which quickly matured into an independent drive. There were reports that these swiftly moving corps might be menaced by panzer units south of the Loire; therefore General Weyland's fighters and tactical reconnaissance planes had to maintain far-flung, vigilant patrols around the flanks.

Finally, on 3 August, the enemy inaugurated serious and potentially dangerous countermeasures. He struggled to concentrate his divided forces around Rennes and St. Malo, and, more ominously, he was massing strength at Mortain for an eleventh-hour drive to cut the narrow American supply corridor at Avranches. This threat gave General Weyland the difficult job of protecting Third Army's rearward lines of communication against breaches by enemy ground forces and desperate attacks by small units of the Luftwaffe.

The three subphases of these operations are considered singly:

Armored-column cover and armed reconnaissance in Brittany.— General Patton's armored columns in Brittany were traveling so fast that frequently they outran their communications. For the Thunderbolts overhead, the bomb line was hourly shifting westward, where the end of the peninsula juts into the Atlantic. The front was so unstable that attacks were never planned in advance; the P-47's eliminated any opposition as they found it.

Naturally the targets were scattered and miscellaneous. In the first 5 days of August, XIX TAC fighters bombed and strafed 21 German troop concentrations or bivouac areas and 1 command headquarters, destroyed 250 motor vehicles, 12 tanks, 9 horse-drawn vehicles, 4 locomotives, and 9 railway cars. The rail network in Brittany was not nearly so dense as that in Normandy, but Mustangs and Thunderbolts cut tracks in 5 places and disorganized 7 enemy fuel and supply dumps and 1 gasoline storage tank.

Although German defenses in Brittany were thin and widely separated, the aircraft of XIX TAC put 17 gun posts out of action, several at the direct request of ground forces temporarily thwarted by the enemy positions. One group of P-47's silenced eight guns one afternoon, and then flew on to destroy another which was marked off with white smoke by Third Army columns. Another afternoon, eight Thunderbolts precision-bombed and knocked out three self-propelled heavy guns directly on the line of advance into central Brittany.

German tanks in Brittany tried every ruse they could invent to escape the fighter-bombers, and occasionally they put in sudden appearances in the zone of operations. On the morning of 2 August P-47's on armed reconnaissance along the northern coast of Brittany found a German armor assembly area and knocked out seven Tiger tanks which had been trying to conceal themselves under a smoke screen. Sometimes air cooperation requests from Third Army's G-3 for Air required immediate action and necessitated vectoring XIX TAC Thunderbolts to the target. One such request was for an immediate attack on a group of tanks in a wood. A P-47 squadron was promptly dispatched to the wood, and its sixteen 500-pound bombs fell in thick concentration on 15 enemy tanks.

Since Luftwaffe opposition was so slight—only one daylight attack was reported in the 5-day campaign for Brittany—armored-column cover flights were often released and given permission to sweep over stretches of road up to 30 miles ahead of our lead tanks. These sweeps, free yet tied definitely to a particular armored column, brought in the heaviest bag of German motor and horse transport on the roads.

The toughest resistance encountered by armed reconnaissance patrols in Brittany was from the walled-in fortress at St. Malo; they were violently shelled by Germans deep inside concrete gun emplacements and on warships in the harbor. Third Army at once called for bomber assistance from Ninth Air Force; meanwhile Thunderbolts braved solid flak on 4 and 5 August to destroy or damage one combat ship each day. In other operations near St. Malo, fighter-bombers blew up buildings loaded with explosives.

Guarding the southern and eastern flanks.—On 3 August the XIX TAC operations order called for cooperation with XV Corps armor and infantry, thrusting southeast from Fougères. Originally this was a reconnaissance rather than an offensive task, although the first patrols landed with reports of transport destroyed and rails cut. The XV was making such rapid headway that armed and tactical reconnaissance units had to fly as far south as Angers and as far east as Laval on the lookout for possible opposition. Tactical reconnaissance aircraft, flying in pairs for self-protection, returned with photographs of German defenses in a wide arc around the Third Army flanks, while armed reconnaissance struck closer to the Army's forward units and attacked whatever offered itself.

Later in August this aerial guard mount on the Third Army's right would turn into one of the most spectacular air cooperation achievements in history. For the time being it was in the watch-and-wait stage. Reconnaissance planes were instructed to seek out the 11th Panzer Division, which was repeatedly reported to be northward bound to hit General Patton's right flank near Rennes. The vigilant aircraft reported every movement to intelligence but, as it worked out, the 11th Panzer Division never turned up on the Third Army front, although a few elements may have been present for a time in the vicinity of Angers.

Protecting the corridor.—From the start the Third Army was menaced in the rear. Above Avranches, the First Army held the Cotentin peninsula; below Avranches, the Third Army was expanding in all directions. These two broad areas of American penetration were tied together only by a narrow, vulnerable corridor, crisscrossed by roads and bridges along which reinforcements were speeding southward. The enemy grouped at Mortain and attempted a powerful drive westward to Avranches and the sea, with the object of cutting the American armies in half.

From the first, General Weyland told his groups cooperating with armored columns to make periodic sweeps backward to cover the Avranches corridor against air attack. As soon as XIX TAC got its first P–51's, they were assigned to keep a constant fighter umbrella over the Third Army rear. Enemy aircraft seldom came over the corridor during the day, but sometimes lone bombers or small formations attacked roads and bridges near Avranches by night. XIX TAC was not equipped with night fighters; hence a request for protection was forwarded to IX Air Defense Command, which put up Black Widows to drive off the harassing enemy aircraft.

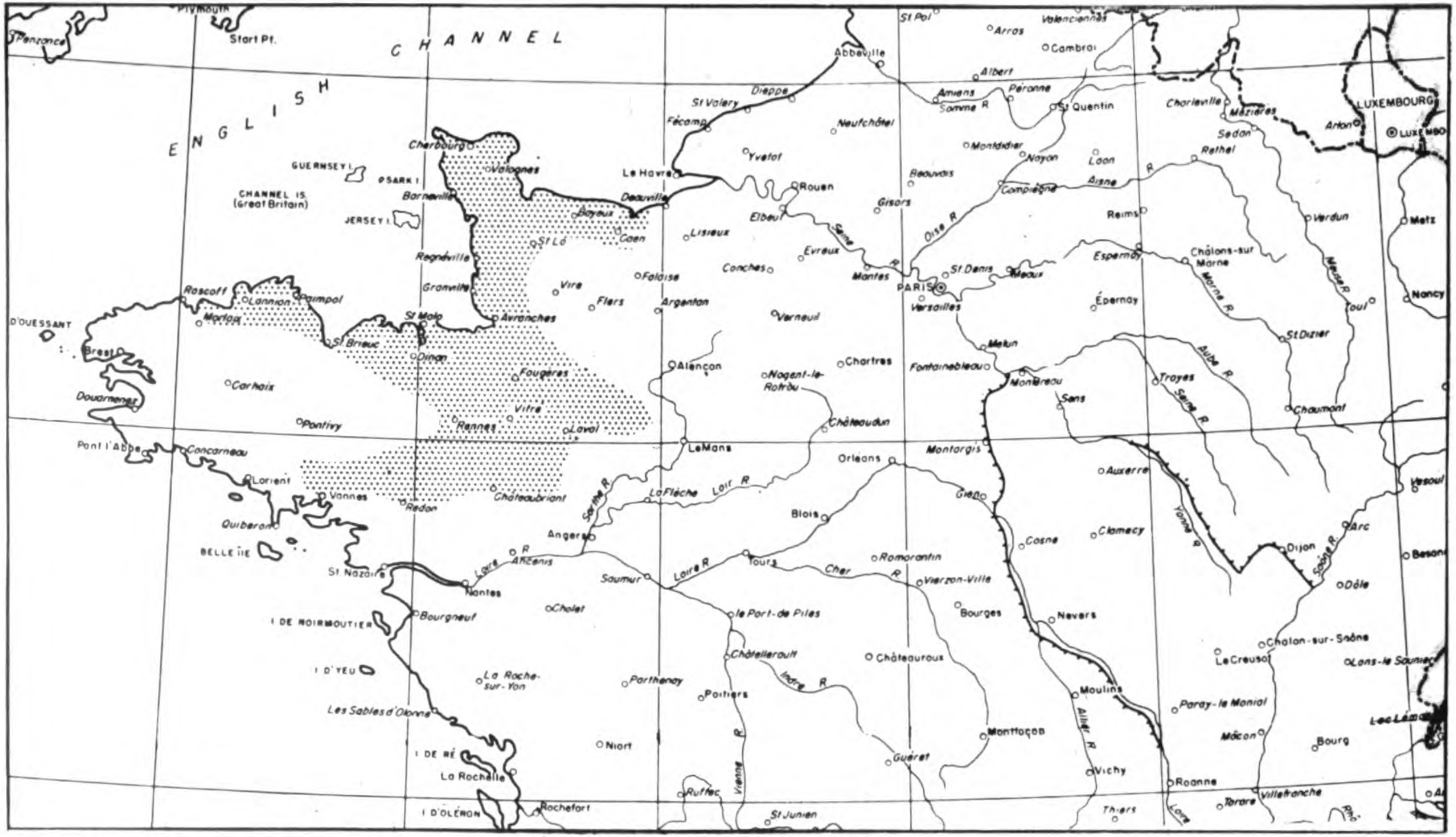
Second Phase

The trap begins to close, 6–12 August.—Between 6 and 12 August, the trap began to close around the German Seventh Army. Rennes fell to General Patton's forces without a struggle; all Brittany was overrun except for the ports; the Third Army began an encircling movement to strike the rear of the enemy forces facing the First Army and the British near Mortain and Vire. Within a couple of days the Third secured Laval and Mayenne and was fanning out to the east and south of Le Mans. As this 6-day period ended, the Third Army's big push to trap the Germans in the Mortain-Falaise-Argentan pocket was underway.

Weather was better in those 6 days, and XIX TAC flew more than 3,500 sorties, averaging almost 600 a day. On the clearest days, some groups flew as many as five separate missions daily, and many pilots put in a working day of almost 12 hours of continuous fighter-bombing. The air arm was being put to maximum use.

On 7 August XIX TAC grew to its greatest stature—nine groups of fighters. Later in the week it took the wraps off its secret weapon, a picked P–47 squadron which carried and fired 5-inch rockets as well as the standard load of 500 pounds of general-purpose bombs and .50-caliber machine-gun bullets.

As General Patton put more and more distance between his



Ground Situation, 7 August 1944

army and the XIX TAC flying fields in Normandy, General Weyland's headquarters came up sharply against its most vexatious problem—communications. On 7 August, Third Army moved to a new camp site near St. James, well below the Avranches corridor. As usual, XIX TAC went along. However, while General Patton's communications were made easier by keeping headquarters close to his advance units, XIX TAC's communications question was seriously complicated by moving away from the airfields in the rear. Nightly, enemy saboteurs cut the extended lines between the combat operations tent of the command and the landing strips. XIX TAC had to leave a small operating echelon behind at Beauchamps to maintain contact with the groups and to control operations.

XIX TAC never overtook Third Army headquarters during August. The Army sometimes moved 20 miles a day. As long as there were no available airfields near the front lines XIX TAC had to stay behind and send an advanced echelon up with the Third Army. General Weyland got into the habit of flying forward every other day to confer with General Patton or his chief of staff.

The enemy made XIX TAC's job as difficult as he could, but every one of his tricks was frustrated by the ingenuity of American fighter pilots. At first the Germans tried picking up our call signs, broadcasting as General Ernest's task force or as the 4th Armored Division, in an effort to catch our aircraft in traps or to send them barging off on wild-goose chases. But the pilots spotted the enemy's clumsiness and unfamiliarity with our terms, challenged him to authenticate, and quickly distinguished true orders from bogus ones.

In the 6 days up to 11 August, fighter-bombers of XIX TAC took care of five separate major assignments:

1. Guarding General Patton's flank along the Loire
2. Neutralizing enemy air power
3. Flying armed reconnaissance
4. Giving the ground forces close cooperation
5. Continuing operations against Brest, Lorient, St. Malo, and the Ile de Cézembre

Loire flank.—Never in military history had a ground commander entrusted the defense of a flank to tactical aircraft. But early in

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August General Patton had only small forces available to man his southern flank along the Loire River. On the other side of the river, G–2 told him, there were enough Germans to cause a lot of trouble if they massed and made a big crossing.

General Patton asked XIX TAC to guard that right flank for him. He said he was confident that General Weyland's aircraft could discover any danger by armed and tactical reconnaissance, and could prevent any concentration or large movement by fighter-bomber attacks. Then the Third Army drove eastward, seizing the principal cities on the north bank of the Loire and leaving only small garrisons behind to hold them.

XIX TAC shifted the main weight of its armed reconnaissance southward to the Loire. Roads, railway lines, and marshalling yards on the enemy side of the river were kept under constant surveillance. Judicious dive bombing and strafing attacks dissuaded the Germans from trying to cross the Loire in force. No real threat ever developed, and by 1 September XIX TAC could look back on a new, difficult job competently taken care of, the defense of the long, sensitive right side of General Patton's eastward-bound columns.

Enemy air defeats—prelude to destruction.—The first major flare-up of enemy air power against the Third Army and XIX TAC began on 7 August and continued sporadically for 4 days. The Luftwaffe was defeated in nearly every large and small engagement. On the fifth day no enemy aircraft appeared.

On the 7th, German aircraft suddenly became aggressive, made a last-ditch attempt to check the encirclement of von Kluge's armies south of the Seine. Early in the morning German bombers carried out a damaging attack on an American supply column southwest of Mortain. At break of day XIX TAC aircraft took off as usual, knowing they might meet the Luftwaffe. Before dusk, 33 German planes were destroyed, 14 in the air and 19 on the ground.

First blood was drawn when the XIX TAC operations room vectored 12 Thunderbolts, which were covering an armored column, to attack the rich Luftwaffe airfield at Chartres. Veering toward the field, the fighter-bombers dropped 8 economical bombs, destroying 6 German aircraft and damaging 3 others. Then Mustangs of the pioneer 354th Group shot up 12 Me–109's and 1 Ju–88 parked on a well-camouflaged GAF airdrome 6 miles to the east. Finally, other Mustangs sweeping the Mayenne area were directed to a new course to intercept 12 aggressive Me–109's. They destroyed 5 and damaged 2.

The next day, as General Patton's leading elements began to burst open the wasp's nest of airdromes between the Loire and the Seine, the Germans flew in groups of 20 to 40 aircraft, and attacked only when they had local superiority in numbers and could count on the advantage of surprise. They tried desperately to break up the widespread rail- and road-wrecking tactics of the American airmen, but by the end of the day five enemy aircraft were down and armed reconnaissance was progressing more punishingly than ever. German single-engine fighters based on the superb flying fields around Paris were now forced to fight defensively to protect their bases, and the Luftwaffe had to make extraordinary efforts to put an offensive patrol into the air.

On 9 August Thunderbolts covering the XV Corps were frequently vectored off course to meet enemy fighters. "Vectored to hostile aircraft by 79th Division," reported 12 pilots of the 362d Fighter Group. "Two Me–109's observed 1000 hours at 700 feet. One destroyed; one evaded combat. Losses: None."

Far to the east of the battle line, beyond Paris, P–51's of the 354th Group saw long rows of Ju–88's on the Reims-Champagne airfield, and flew down the muzzles of German antiaircraft guns to machine-gun the base from 6,000 feet to the "deck." They destroyed 6 German aircraft, 2 light flak guns, and a flak tower. Nearer the fighting front, scores of American planes engaged large numbers of German aircraft in combat. Results for the day: 13 enemy planes destroyed in the air, 6 on the ground.

German activity died down on 10 August, when only four enemy planes were shot down. On 11 August none appeared. Costly to the foe though they had been, those 4 days had been only a prelude to the defeat of the Luftwaffe in France.

Armed reconnaissance, 6–12 August.—The statistical story of armed reconnaissance for this period is as follows:

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More than 75 locomotives
Almost 1,000 freight cars
Almost 1,000 motor transport vehicles
More than 125 horse-drawn vehicles
Seven bridges
Eight marshalling yards
Eight supply, fuel, and ammunition dumps

—destroyed by XIX TAC Thunderbolts and Mustangs on armed reconnaissance in 6 violent days.

From the beginning of this phase XIX TAC sent its armed reconnaissance planes far beyond Paris, far south of the Loire. The campaign had a focal point; in wide railroad reconnaissance sweeps north, east, and south of Paris the fighter-bombers sought to isolate the eastern battlefield, to strangle the rail lines entering Paris from every direction. Around Paris P–47's and P–51's spotted, bombed, strafed, and destroyed long, loaded troop trains, standing rows of loaded oil tankers, fuel dumps, and all types of transport.

One morning the 362d Group sent out a 40-plane armed reconnaissance sweep north and east of Paris. This patrol, one of hundreds in those 6 days, returned to its landing strip after a few hours of field-day flying with this report: four 500-pound bombs dropped on enemy guns—guns silenced; 8 fragmentation clusters, two 500's dropped on marshalling yard—40 boxcars and 1 locomotive destroyed; 8 railway cars damaged at another marshalling yard, 25 damaged at a third; 2 fragmentation clusters on a hostile airdrome; 7 miscellaneous motor transport vehicles raked and destroyed on the roads; 15 freight cars loaded with 155-millimeter German guns strafed and damaged.

That same afternoon, on its third mission of the day, this same group planted 26 bombs on 7 Tiger tanks, 16 on a marshalling yard, and, in a deck-strafing sweep, machine-gunned 2 armored cars, 2 ammunition trucks, and 1 gasoline truck.

With one group wreaking such destruction in one day it was small wonder that as the infantry and tanks advanced, they found the roads cluttered with the twisted wreckage of German trucks, half-tracks, tanks, and guns.

Close cooperation—closing the jaws.—As the trap began to form, tank hunting was good. Squadrons covering the advance of the XV Corps' armored divisions between Laval and Mayenne found plenty of enemy armor. P-47's and P-51's entered tank battles around Mortain and Vire. When the Germans swung about at Alençon to meet the Third Army's threat to their rear, American fighter-bombers and artillery found the roads and the fields full of targets to attack.

XIX TAC'c statistical record for 6–12 August:

More than 150 tanks and armored cars destroyed
More than 30 field guns or mobile flak posts wiped out
Three troop concentrations scattered
One German headquarters strafed and dispersed

Communications along the standard channel, tactical reconnaissance to ground to TAC headquarters to aircraft in the air, improved immensely, as did the simpler thick-of-battle communication between fighters and tanks beneath them. With swifter communications, fighter-bombers began to figure more and more prominently in tank battles and armored thrusts as they were going on. The tanks that entered Morlaix had an extremely helpful flight of Mustangs circling constantly overhead. The 79th Infantry Division asked for an air attack on a camouflaged house and tower; the doughboys watched five hits with 500-pounders tear the German position apart. Enemy tanks stopped the Third Army momentarily northeast of Alençon. Fifteen general-purpose bombs—and the Third Army resumed its offensive.

When fighter-bombers were not right there, the ground forces knew that they could be summoned and would arrive within the hour. The Fifth Infantry Division requested bombardment of some railway gun positions which were holding up their progress near Angers. Forty minutes later, Fighter Control and Combat Operations vectored a Thunderbolt squadron to the area and the enemy guns were shattered by two direct hits.

Reports of spur-of-the-moment tasks performed for the ground forces began to flood XIX TAC headquarters. From 8 Thunderbolts: "Targets assigned by Eggcup. Two direct hits with 500-pound bombs on small buildings. Completely destroyed." From 7 Mustangs: "Vectored by Grandchap Able to road. Destroyed 50 motor transport, damaged 80. Destroyed 25 horse-drawn vehicles. Killed 200 troops."

Along the boundary between the First and the Third Armies' zones of operations, aircraft of XIX TAC frequently were radioed emergency requests. One report read: "Fourteen bombs on mortar position. Target assigned by Murphy. Position destroyed." Murphy was the code name of a First Army combat command.

Perhaps the surest indication of the effectiveness of the fighter-bomber attacks was the unprecedented surrender of German troops to air power. One day 8 Mustangs flashed a report that they had "strafed a column of more than 100 motor transport and animal-drawn vehicles and continued until the Germans put up a white flag and our troops closed in to take them from the southwest and east."

Brest, Lorient, St. Malo, and the Ile de Cézembre.—Fighter-bombers were obviously not the planes with which to storm citadels. When General Patton's divisions were stumped around the forts of Brest, Lorient, and St. Malo, and the near-by Ile de Cézembre, requests for air cooperation were transmitted to the heavy bombers of the Eighth Air Force and the mediums of the Ninth.

Yet Thunderbolts and Mustangs did all they could. On 10 August 8 courageous P-47 pilots asked the Fourth Armored Division for permission to dive-bomb the marshalling yards at Lorient, the concrete-walled submarine base below Brest. Told to go ahead, they flew down into intense, accurate, heavy and light flak to destroy 42 railway cars and a flak battery. Every Thunderbolt returned. Meanwhile, over Brest and St. Malo, two Mustang teams on tactical reconnaissance observed all kinds of movement and sent back radio reports to XIX TAC headquarters. These flights meant that far less time was wasted in uneventful armed reconnaissance. When the tactical reconnaissance planes found important targets, armed and bombed-up Thunderbolts and Mustangs were sent to them immediately.

Third Phase

The pocket, the run-out.—The Falaise-Argentan trap eventually netted 57,000 Germans. According to an unofficial report in mid-August, "There were 2 dead Germans for every live one, and the greatest stench of all time hung over the pocket." The crucial week of 12–19 August saw the Seventh Army all but liquidated, the Fifteenth Army turned back violently when it came to help, and indi-

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vidual soldiers rushing pell-mell across the Seine and back to Germany without organization, chain of command, weapons, or transport.

As the week started, General Patton's XV Corps was driving northward from Alençon and the Canadian First Army southward from Falaise. The Germans in the pocket had plenty of fight left. Behind them stretched an escape channel several miles wide, and on 13 August they made their first large-scale attempt to withdraw.

That morning 37 P-47 pilots of the 36th Group found 800 to 1,000 enemy vehicles of all types milling about in the pocket west of Argentan. They could see American and British forces racing to choke off the gap. They went to work. Within an hour the Thunderbolts had blown up or burned out between 400 and 500 enemy vehicles. The fighter-bombers kept at it until they ran out of bombs and ammunition. One pilot, with empty gun chambers and bomb shackles, dropped his belly tank on 12 trucks and left them all in flames. All told, on the 13th, XIX TAC fighter-bombers destroyed or damaged more than 1,000 road and rail vehicles, 45 tanks and armored vehicles, and 12 locomotives. Inside the pocket they reduced 10 enemy delaying-action strong points to rubble.

The pocket was shrinking. The Germans inside used all their food and gasoline, and the trains and trucks coming to resupply them were stopped miles away from their destination. An 18-year-old prisoner fainted while being interrogated; he and his company had had no food for 4 days after fighter-bombers had smashed their field kitchen. Another prisoner, a junior officer of the 363d Infantry Division, said: "You have bombed and strafed all the roads, causing complete congestion and heavy traffic jams. You have also destroyed most of our gasoline and oil dumps, so there is no future in continuing the fight."

With the entire German force in the trap beginning to think the same way, P-47's carried leaflet bombs besides their more lethal loads.

On 14 August, 300 to 400 enemy soldiers waved a white flag when Thunderbolts of the 405th Group circled them northeast of Argentan. Fighter control was given the grid coordinates so that the nearest ground troops could pick up the prisoners.

Four days after the dismal rout of the 13th, the Germans tried another mass movement out of the pocket. Figuring that low clouds offered a reasonably good safeguard against our aircraft, they began to take to the roads two and three abreast in anything that had wheels.

A short squadron of American fighter-bombers dived dangerously low through the clouds and saw the traffic jam already under attack. They sent word back to headquarters, and soon the sky was so full of British and American fighter-bombers that they had to form up in queues to make their bomb runs. The gigantic attack kept up until after nightfall. At dawn the next day the Thunderbolts of the 36th Group spotted more than 1,000 enemy vehicles headed north, bumper to bumper. Nearer Falaise, they saw 1,000 more vehicles marked off by yellow smoke. Eagerly the pilots radioed back to base, but were told not to attack because the vehicles were in the British area of responsibility. The aircraft of XIX TAC disconsolately stuck to their own operational zone, while Typhoons, Spitfires, and Mustangs of the RAF's Second Tactical Air Force annihilated or damaged almost 3,000 German vehicles.

That day a senior staff officer of the British Second Army said that the Germans' power of resistance had been shattered.

As the aircraft of XIX TAC, IX TAC, and 2d TAF were cornering, immobilizing, and destroying the Germans in the pocket, General Patton's tanks reached the banks of the Seine at Mantes Gassicourt and Vernon. The XV Corps immediately swung east along the river bank, closing a huge new trap around the enemy remnants which had escaped from Falaise. The enemy now fought to get to the Seine and across by ferry, barge, ponton bridge, and even by swimming, the while XIX and IX TAC's sent implacable patrols over the river to catch the Germans in flight.

Fourth Phase

The Luftwaffe goes home.—Outnumbered, outfought, outmaneuvered, the Luftwaffe did what it could to frustrate Thunderbolts and Mustangs, but that was not enough. Pretending to be an officer of the 79th Infantry Division, one English-speaking German tried to vector some P-47's away from their targets. One Thunderbolt pilot, detecting something faintly guttural about the voice and desiring to check, asked him to sing "Mairzy Doats." That stopped the impostor cold.

Meanwhile XIX TAC aircraft were decisively beating the Luftwaffe in the air and on the ground. On 14 August the Germans flew fewer

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than 100 single-engine fighter sorties, presumably because they were trying to evacuate the battered airfields around Paris. The next day they came back in patrols of 20 to 80 aircraft, piloted by aggressive but inadequately trained young men who could not even take proper evasive action. Even though our bases were all but closed in by low clouds, and even though Germans in some engagements outnumbered Mustangs by 10 to 1, the Luftwaffe took its customary lacing. Fifteen German planes were destroyed on the 15th and 13 more on the 16th.

So rapidly did the Germans evacuate some airfields that they had no time for demolition. On 17 August repairs were expedited at the big military and civilian airfield at Châteaudun, and 10 days later XIX TAC moved in and used it as a permanent base for a reconnaissance group and a refueling and rearming station for fighter-bombers.

By this time, with Allied air superiority everywhere obvious to the enemy front-line soldier, the GAF had to make a drastic and far-fetched justification to keep the German infantry and armor from grumbling. A document captured at Angers, issued by the military governor of France for dissemination to troops, said, "The ground soldier in action on the invasion front feels himself depressed most of all by enemy air superiority. In spite of the numerical inferiority of our air force, there have been successes accomplished, however, which the single soldier, tied down to his narrow section of the front, cannot appreciate."

About the time this apologetic proclamation was issued, Mustangs and Thunderbolts were running into sharp combat every day. The veteran 354th Group, which had been worsting the Luftwaffe steadily over Germany and France since December 1943, always took a prominent part in air battles ranging from the front to miles behind it. The Germans tried everything—even fake dogfights, aerial equivalent of the football Statue of Liberty play. On one occasion two FW–190's with no markings and three ME–109's with faked United States markings chased each other around the sky, then all dived and strafed an American armored column.

On 25 August the GAF fighter force in France was broken. In combat over France and Germany, in strafing attacks on Luftwaffe airfields, fighter-bombers of the Eighth and Ninth Air Forces destroyed 178 German aircraft, probably destroyed 13 others, and damaged 63, making a total of 254 enemy planes permanently or temporarily put out

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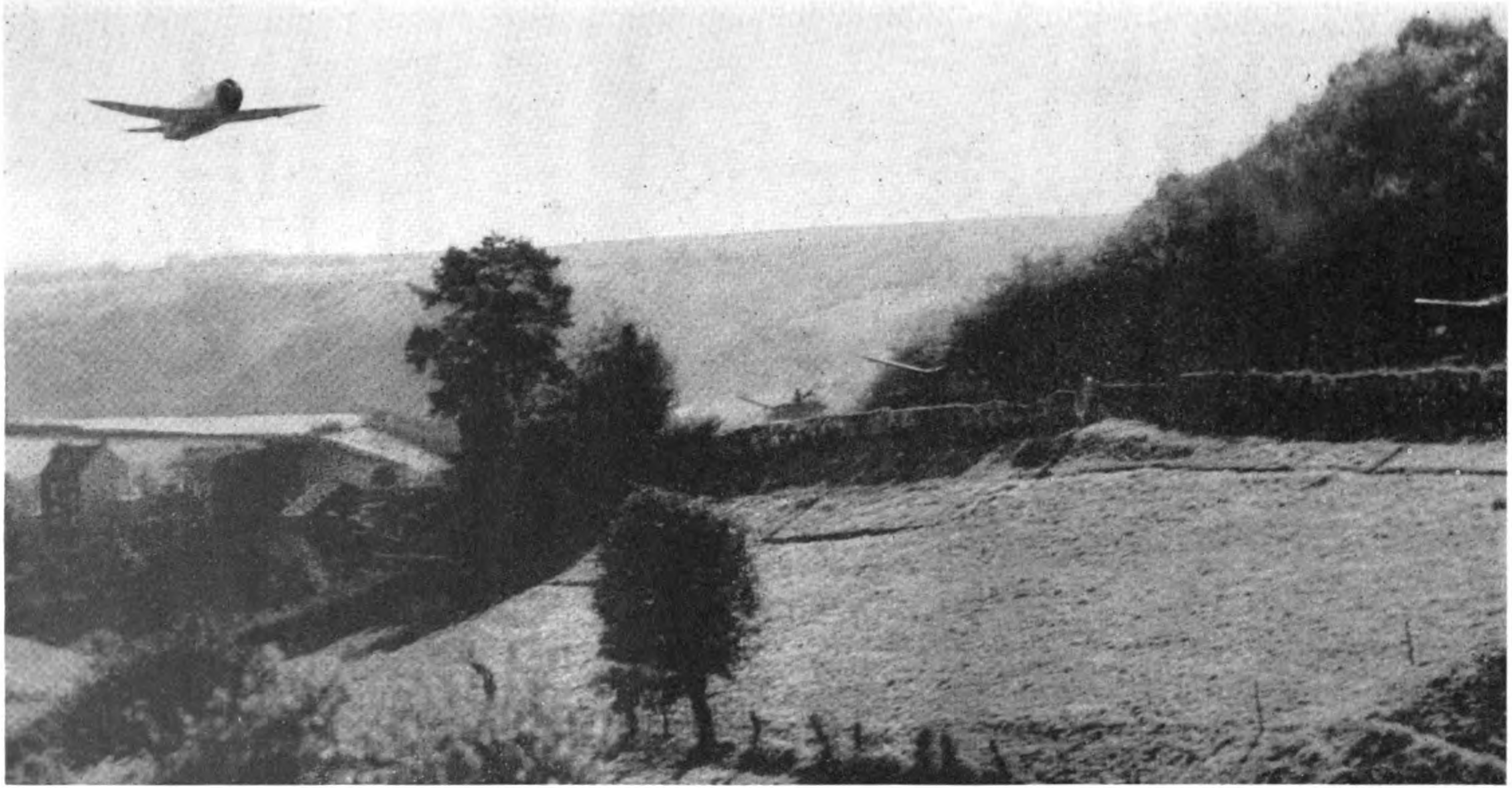

Official Photo USAAF.

By radio a P-47 gives information on enemy tank columns to American armor during the fighting of August 1944.

of action. XIX TAC claimed more than one-quarter of the day's victories: 36–1–8 in the air, 18 destroyed and 4 probably destroyed on the ground. All the victories in the air were won by the 354th, which was active all day long in a series of single-squadron fighter sweeps against enemy airfields north and northeast of Paris. The Mustang pilots were always outnumbered, yet nearly always won. Late in the day 12 of them slashed into 45 FW's and ME's and destroyed 13 enemy fighters for a loss of 4. Another squadron blew up 13 single-engine enemy fighters on the ground at fields near Beauvais and Reims.

At dusk on 25 August Thunderbolts and Mustangs saw enemy aircraft with belly gasoline tanks moving eastward, as their complex of bases around Paris fell into the hands of Third Army spearheads. Within a few days the Luftwaffe was driven farther east as General Patton's advances made GAF bases along the Marne untenable. The remaining German fighter force in eastern France was compelled everywhere to decamp and to start operating from bases behind the Siegfried Line. As August ended, XIX TAC had to seek enemy aircraft on the ground, since they rarely took to the air. On 28 August fighter-bombers first destroyed 11 German aircraft by bombing and strafing a field near Neufchâteau, then sighted a train carrying 13 Ju–88 fuselages and shot up every one of them.

Fifth Phase

The end in France.—The end, when it came, was rapid. On 19 August fighter pilots reported fires and explosions in Paris, and above and below the city Third Army advance elements were striking out in a bold encircling move. South of Paris, the Germans tried to hold out in positions on high ground, but they were unable to check the relentless advance of the Patton eastward-bound columns.

The next day pilots on armed reconnaissance saw the highways, the railway lines, and the marshalling yards behind Paris clogged with trucks, trains, and animal-drawn vehicles, all hurrying toward the Reich. West of Paris, disorganized units were trying to get across the Seine any way they could. Aircraft of XIX TAC dropped delay-fuzed bombs, set for detonation during the night, on south bank ferry slips. They exploded at the peak of the Seine crossings, in the night's darkest hours. Within Paris, the Germans announced that rioting had broken out and in a desperate order of the day they threatened to shoot any person participating in the disturbances.

The situation was extremely fluid. North of the capital, Thunderbolts gave armor and infantry the usual close cooperation against the few targets remaining. They demolished tanks, barges carrying tanks across the Seine, and isolated German machine-gun nests which sought to cover the river crossings. On 23 August, with Army spearheads more than 60 miles east of Paris, the French Second Armored Division and the First Army's Fourth Infantry Division rode into the capital to complete the official occupation.

In the east, new hunting grounds developed for the fighter-bombers, nearer and nearer the Siegfried Line. Firing rockets, dropping bombs, shooting machine guns, XIX TAC aircraft smashed cars in ammunition convoys, 105-millimeter big guns guarding the German retreat, still more motor vehicles, and every day, as enemy fuel and vehicle shortages decreased motor transport, more and more animal-drawn carts and weapons. Combat operations planned a short-range project in the Melun-Provins area, designed to cut off the still-open escape routes of Germans trapped south of the Loire. Everywhere they cut rails and blew up trains—and in the south, as in the north, the enemy retreated with heavy losses and in great confusion.

Far to the west, General Weyland's aircraft helped the determined VIII Corps to smoke out the obstinate defenders of Brest. In 2 slashing days the fighter-bombers destroyed or damaged 14 enemy naval and merchant vessels in the Brest harbor, knocked out eight gun positions, and saturated a defended area that had been marked by the white smoke of fire bombs. Brest doggedly continued to hold out, but the fortress was to fall in September.

Toward the end of the month General Patton's army had crossed the Marne on a 90-mile front and was rolling toward the Aisne. Château-Thierry and other battlefields in the Marne-Aisne region, which had taken months to conquer in World War I, fell to the Third Army in a few hours. As August ended, 70,000 Germans had passed through Third Army prison cages, and the Patton forces had crossed the Meuse and were fighting at the approaches to the Siegfried Line. Aircraft of XIX TAC frequently attacked targets over the German border. Except for some miscellaneous cleaning up

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and some extremely hard frontier fighting, the Battle of France was over and the Battle of Germany had begun.

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In mid-August General Patton commended XIX TAC's cooperation with the Third Army, for which General Weyland was awarded the Bronze Star. The commendation read:

> The superior efficiency and cooperation afforded this army by the forces under your command is the best example of the combined use of air and ground troops I have ever witnessed.
>
> Due to the tireless efforts of your flyers, large numbers of hostile vehicles and troop concentrations ahead of our advancing columns have been harassed or obliterated. The information passed directly to the head of the columns from the air has saved time and lives.
>
> I am voicing the opinion of all the officers and men in this army when I express to you our admiration and appreciation of your magnificent efforts.

Part II

Highlights of Day by Day Air Operations

1 August

ON THIS first day of XIX TAC operations, unfavorable weather kept the fighters grounded until well into the afternoon. Armored-column cover was so arranged as to maintain eight fighter-bombers over each armored division, the eight-plane flights being relieved every hour. Planes and tanks worked closely together, talking to each other by VHF radio.

While General Patton had enjoined XIX TAC not to blow up bridges, it might have been expected that the enemy would do so in order to retard pursuit, but so headlong was the Germans' panicky withdrawal that they had no time to conduct any such demolition. Thus the leading American armor often outran its communications, and the Army's latest information on the location of its forward elements frequently came from reconnaissance or fighter-bomber pilots. To make the most of this source of information, XIX TAC pilots were instructed to include in their reports, whenever possible, the point at which the head of the column was last observed.

In 10 missions of 147 sorties, 22 tons of bombs were dropped. No enemy aircraft were encountered and no losses were sustained.

2 August

Another wing, the 100th, and two more groups, the 405th and 363d, were placed under XIX TAC's operational control. They were most welcome additions, because the command was saddled with the twin commitment of covering armored fingers probing toward the Breton capital of Rennes and toward Brest, and of supplying protection to the Avranches bottleneck.

Although the 363d Group was grounded by weather all day, the others could operate after about 1000, flying 23 combat missions consisting of 223 sorties and dropping 35.75 tons of bombs, representing

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a marked increase over the previous day's activity. There were no claims against enemy aircraft, but two planes were lost to flak.

3 August

Weather again was on the enemy's side. The air plan for the day provided cover for the XV Corps' 79th Infantry and 5th Armored Divisions, in addition to protection of bridges and roads in the Avranches-Pontaubault locality and to continued cover for the three armored detachments pushing westward through Brittany. But bases were nonoperational most of the day, with low stratus, nimbostratus, and light showers. Only 6 missions, of 8 aircraft each, were able to take off, of which 4 were unsuccessful because of weather, all bombs being jettisoned or returned to base. The other 2 missions resulted in the destruction or damaging of 40-odd motor and horse-drawn vehicles, including ammunition trucks, in the path of the 4th and 6th Armored Divisions. Total sorties were 48; tons of bombs dropped, 3.25. One aircraft was lost. Twenty-four tactical reconnaissance and two photographic reconnaissance sorties were flown.

This was the date on which, with continued Luftwaffe night attacks against Third Army troops, Ninth Air Force was requested by XIX TAC to supply night fighters.

4 August

Although only four groups were available and low ceilings over bases prevented operations until 1030, the scale of air activity rose sharply to 30 missions consisting of 424 sorties.

Activities of the day included cooperation with the 4th Armored Division, in which 15 enemy tanks were destroyed or damaged; attacks on the strong concrete pillbox defenses of St. Malo in the face of intense flak and fire from warships; and armed, tactical, and photographic reconnaissance flights along the flanks and routes of the advances and as far south as Angers and east as Laval. Some aircraft were damaged by flak, but no planes or pilots were lost and there were no claims against enemy aircraft. The four groups in action dropped 52.5 tons of bombs on the targets.

5 August

On this date the XIX TAC order of battle was raised to five groups when the 36th was placed under General Weyland's control.

Only part of the day was flyable, since the wind blew low stratus clouds from the English Channel onto coastal airdromes at about 1100 and they were not clear until late afternoon. Nevertheless, 246 combat sorties and 10 successful tactical and photographic reconnaissance missions were flown. Forty-four tons of bombs were dropped, results including 58 motor vehicles, a headquarters, nine horse-drawn vehicles, and eight gun positions destroyed, plus damage to a naval vessel in St. Malo harbor.

In the first 5 days of blitz warfare, United States style, the Third Army had conquered most of Brittany, and XIX TAC fighter-bombers had flown 1,088 sorties. In the face of our patrols the Luftwaffe had put up no resistance by daylight. Losses totaled only three aircraft. Claims against ground targets for this period have been given earlier.

6 August

With the fall of Rennes and the acquisition of airfields around that city, XIX TAC fighters were not only much closer to the scene of operactions but also in a locality more favored by weather than the rain-pelted Normandy peninsula.

The picture had changed; the encirclement had begun. In view of this, the main weight of XIX TAC's air power was shifted to the eastern front and the Loire valley, with patrols over the danger area in the Avranches corridor.

Squadrons covering XV Corps' 79th and 90th Infantry and 5th Armored Divisions between Laval and Mayenne found the hunting good, especially in tanks. One P–47 was lost; while strafing tanks it "mushed in" and exploded.

The day's combat sorties totaled 293. There were no enemy aircraft claims, but 35.5 tons of bombs were dropped on varied targets. In addition, 26 successful tactical and photographic reconnaissance missions were flown, and B–26's of IX Bombardment Division attacked the defenses of St. Malo in response to the XIX TAC request of 4 August.

"A successful day," pronounced Third Army's G–3 (Air) Section, "with attacks on all types of targets, from boats to field guns. Movement east, south, and west by ground troops was greatly facilitated."

7 August

To meet its increased responsibilities, the strength of XIX TAC was again augmented, with nine full groups of fighter-bombers now under its operational control. These were the 36th, 358th, 362d, 371st, 373d, 405th, and 406th, all equipped with P–47's, and the 354th and 363d Groups, flying P–51's. Seven of these groups and both of the wings, the 100th and 303d, had been under the administrative control of the Command for months in the old IX Fighter Command days in England, so the basis for effective teamwork was firmly laid.

This was the day on which word was received of the GAF attack on an American supply column; it became apparent that enemy air power was becoming more aggressive. It was a day of hard fighting; when it was over, XIX TAC claims included destruction of 33 aircraft (14–1–3 in the air, 19–0–4 on the ground) for a loss of 10 planes and pilots. Sorties hit a new high, with a total of 601. Bomb tons on targets amounted to 62. Thirty-two tactical reconnaissance sorties were flown.

Armed reconnaissance missions now were reaching far beyond Paris as well as south of the Loire. Several trains and a power plant were successfully attacked as far east as Troyes and Soissons.

It was moving day, this time from the vicinity of Beauchamps to a point near St. James.

8 August

To begin its second week of activity, XIX TAC struck another high peak by flying 717 sorties. Five enemy aircraft were destroyed and 11 XIX TAC planes were lost. Strafing and dropping 94.5 tons of bombs, the fighter bombers destroyed 29 locomotives, 137 freight cars, 195 motor vehicles, 10 fuel and ammunition vehicles, 16 horse-drawn vehicles, 17 tanks or other armored vehicles, and 11 flak positions; damaged two locomotives, 57 freight cars, 28 motor transports and 26 armored vehicles; cut rail lines at 7 points; and attacked a troop concentration and 7 fuel dumps, 1 of which was completely destroyed. Reconnaissance planes flew 46 tactical, 1 photographic, and 6 artillery adjustment missions.

The outstanding features of the day's operations were the large bag of enemy transport destroyed or damaged and the almost continuous air cover provided our ground forces. Improved communications with the 67th Reconnaissance Group facilitated the flow of information to the Army G–2 section, and in several instances information of enemy motor transport and tank concentrations was received in time to permit A–3 to order a mission.

9 August

This was the busiest day since XIX TAC became operational. There were more missions (72) and more sorties (780) than on any previous day. Nineteen enemy planes were destroyed, claims being 13–2–0 in the air and 6–0–2 on the ground. Nine United States pilots and planes were lost.

All but two of the groups flew three missions. The three squadrons of the 363d Group and the 405th and 406th Squadrons of the 371st Group flew five missions. These squadrons averaged 11 hours and 45 minutes in the air.

A rocket squadron, the 513th of the 406th Group, was now in action, and 16 five-inch rockets were launched against ground targets, in addition to 58.5 tons of general-purpose bombs and numerous rounds of .50-caliber ammunition.

Thirty-seven tactical and photographic reconnaissance sorties aided in keeping an eye on the enemy.

10 August

Operations were somewhat reduced by low stratus clouds moving in from the Channel late in the afternoon. Nevertheless, 659 sorties comprising 54 missions were flown. Forty-six and one-quarter tons of high explosive were dropped on targets and four enemy planes were shot down. XIX TAC lost six aircraft and pilots. Thirty sorties were flown by tactical reconnaissance P–51's, flying chiefly over areas on the outer fringe of operations.

Targets ranged from motor transport, armored vehicles, and similar objectives to the flak-defended bastion of St. Malo, still defying Allied forces to drive them out, still responding to the Fuehrer's express command to hold out to the last man.

One of the six casualties of this day was Col. Morton D. Magoffin, commanding the 362d Group. Hit by flak while on a dive-bombing and strafing mission in cooperation with the XV Corps east of Le Mans, he continued to lead the squadron in its bombing run, hoping that the dive would blow out the fire in his engine. When it failed to do so, he pulled up and bailed out. The sequal to this episode did not come to light until weeks later. Colonel Magoffin fell into enemy hands and was taken to a hospital in Paris with a flak wound in his right thigh. When the enemy evacuated Paris, he hid in a closet and escaped notice. French surgeons performed a badly needed operation, and the colonel was subsequently evacuated by air to England.

11 August

With the big push under way to the north and northeast to encircle German troops in the Mortain-Falaise-Argentan region, groups cooperating with the 5th Armored, 2d French Armored, and 79th and 90th Infantry Divisions were especially busy. Combat sorties totaled 454.

One feature of the day's operations was the successful bombardment of an enemy railroad gun position which was holding up the progress of the 5th Infantry Division near Angers. Forty minutes after the request for air attack on this position was received at Combat Operations, Fighter Control at 303d Wing had vectored the 367th Squadron of the 358th Group to the target, and the position was destroyed by two direct bomb hits and four near misses.

For a loss of 4 planes, XIX TAC claimed a total of 10 locomotives, 243 railroad cars, 15 tank cars, 42 tanks and other armored vehicles, 119 motor vehicles, and 20 horse-drawn vehicles demolished or damaged. Successful attacks were made on 6 marshalling yards, 5 field gun positions, a troop concentration, a headquarters, an ammunition dump, a storage building, and an airfield, and 10 railroad lines were cut. Of 15 reconnaissance sorties flown, 10 were tactical, 3 photographic, and 2 for artillery adjustment.

12 August

Despite the continued efforts of saboteurs, communications through the Avranches gap were sufficiently stable to permit the transfer of

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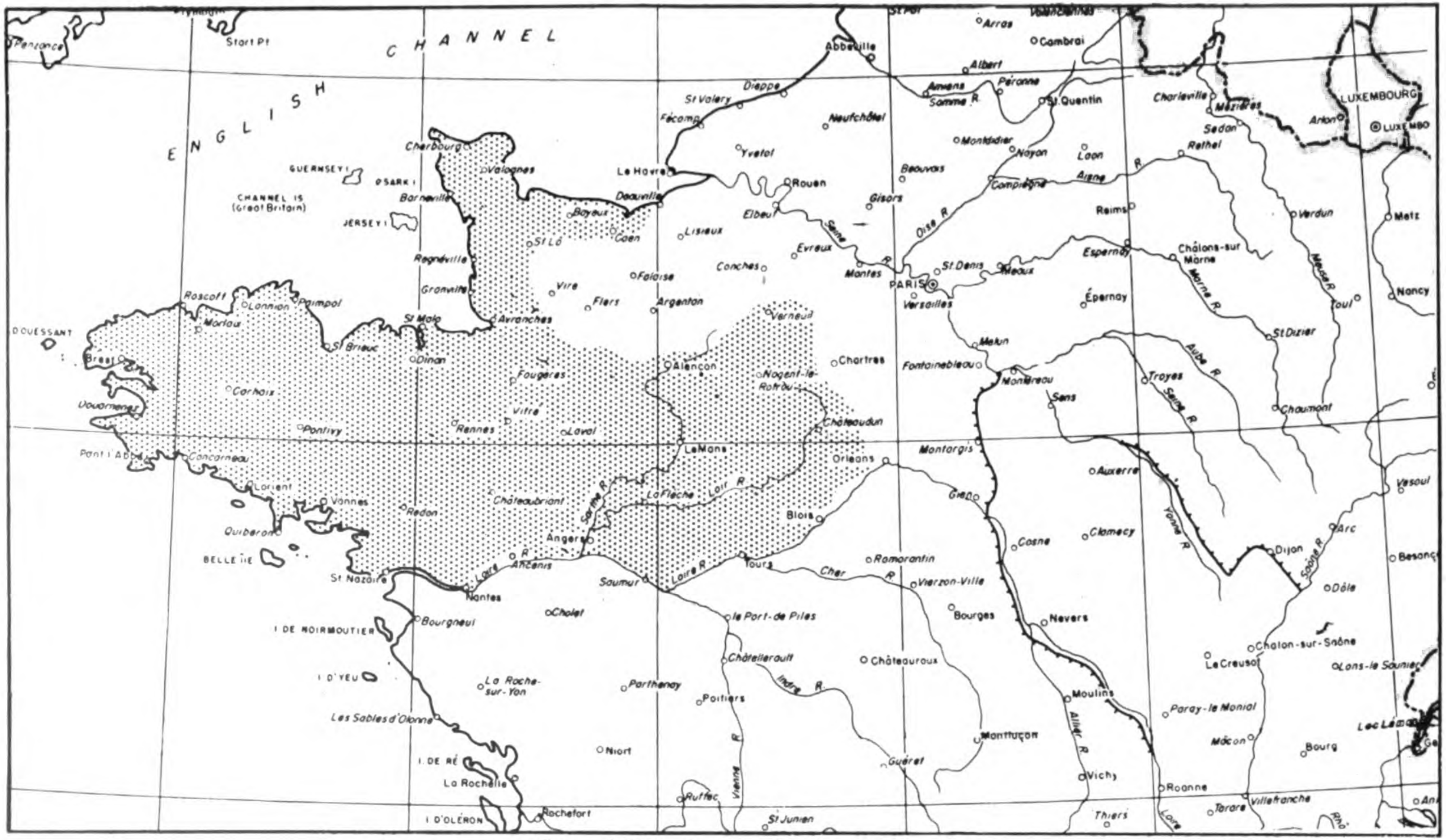

Ground Situation, 15 August 1944

operational control to the forward echelon in the vicinity of St. James on this date.

Forty-one missions, consisting of 481 sorties, were flown, and the day's toll in enemy transport and communications was gratifying. No planes were lost and there were no claims of enemy aircraft.

13 August

The deadly squeeze on entrapped German forces was nearing a complete strangle. The biggest transport kill of the entire month, the 400 to 500 burned or blown-up enemy vehicles referred to earlier, occurred on this date. When P-51 pilots of the 363d Group reported that they had flown to the edge of Paris without encountering flak, the fall of the capital, which occurred a week later, was foreshadowed.

All of the day's bag in aerial combat fell to the 363d Group which scored 12-2-1 for the loss of a single plane. Flying assault cover, 8 of these Mustangs scored 4-1-1 for 1 in an early morning fight with 12 ME-109's and FW-190's. On an evening mission, 8 pilots of the same squadron, the 382d, sighted approximately 25 ME-109's and FW-190's strafing our troops. They destroyed 8, an average of 1 each. Another was probably destroyed and the rest were driven off.

Combat sorties amounted to 718 and reconnaissance sorties to 38. Ten planes were lost, only one to enemy aircraft.

14 August

With his airfields around Paris endangered and many in process of evacuation, the enemy appears to have flown fewer than 100 single-engine fighter sorties on this date, chiefly in defense of ground troops.

The only XIX TAC group to meet air opposition was the 405th, giving close cooperation to the 7th Armored Division. Five P-47's and pilots were lost against claims of 4-2-1. Four of the five losses were incurred when four P-47's, pulling up from reconnaissance about 20 miles east of Dreux, were bounced from above at 3,000 feet by 16 FW-190's which came in below the four P-47's flying top cover. Three of the attackers were claimed as destroyed, plus one probable and one damaged.

Seventy-nine combat missions, including 665 sorties, were flown, together with 18 reconnaissance missions involving 36 sorties.

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15 August

With enemy fighter activity rising sharply to a total of about 350 sorties, XIX TAC claims were 13-0-3 in the air and 2-0-7 on the ground. Five U. S. planes were lost. North of Dreux, the 406th Group's Tigertaming 513th Squadron got 4 heavy tanks and 1 light one with its 5-inch rocket projectiles.

Total combat sorties were 659, and 40 tactical reconnaissance and artillery adjustment sorties were flown.

An advance element of XIX TAC had leapfrogged forward to a wooded section north of Laval.

16 August

After several days of intensive operations, activity was curtailed by low stratus clouds which covered airfields in the Cherbourg peninsula from approximately 1000 to 1500. Many pilots returning from early morning missions were unable to land at their own bases.

The weather definitely favored the enemy; while our bases were "socked in," his were clear. Hourly attacks by three strafing Me-109's were reported by Combat Command "A" of the 4th Armored Division at Orléans. These strafers successfully eluded our fighters, but a probable attack on our ground forces southwest of Paris was apparently prevented at 1545 when 70-plus FW-190's, many carrying bombs, were engaged by eight P-51's of the 354th Group over Rambouillet Forest, 10 miles west of the capital. Two German planes were shot down and two P-51's were lost, but the enemy forces were dispersed toward the south.

Half an hour later, another patrol of 8 P-51's sighted 20-plus ME-109's south of Dreux at 11,000 feet. Orbiting in elements of 2, the squadron climbed to 14,000 feet and attacked from above. At the same instant, 60 or more ME-109's joined the combat, emerging from cloud cover to the north. In the next 15 minutes the 8 Mustangs, outnumbered 10 to 1, were busily embattled from 11,000 feet to the deck. The enemy was aggressive and apparently experienced, but he tried to turn with our aircraft. When it was all over, our pilots had destroyed 11 and damaged 2 against losses of 2 planes.

Because of the weather, only 280 combat sorties and 36 reconnaissance sorties were flown. Thirteen enemy planes were destroyed and

4 damaged. Five of ours were lost. Five tanks, 25 motor vehicles, and 55 railroad cars were demolished or damaged, 2 airfields and 2 gun positions attacked, and 3 railroad lines cut.

17 August

Air opposition to XIX TAC fighters was virtually nil, despite clear weather over enemy bases and clouds over ours.

St. Malo's garrison surrendered, yielding a total of 11,600 prisoners from the time the siege began.

The Third Army reported Châteaudun clear of the enemy, and immediate steps were taken to make this good airfield available to our groups, already laboring under heavy handicaps of range. Because of the speed of the American advance, the Germans had not had the opportunity to carry out such extensive demolitions as at other fields.

On this day 331 combat and 56 reconnaissance sorties were flown. Two enemy planes were destroyed in combat, with no losses.

18 August

Harvest time had come to the Argentan-Trun pocket, with Allied aircraft enjoying one of their biggest days of the war. The lion's share of the spoils, however, went to RAF aircraft, since the concentration of enemy vehicles was in British-assigned territory. Although denied a chance at the jackpot, XIX TAC groups accounted for 17 tanks, 206 motor transport, 30 horse-drawn vehicles, 7 locomotives, and 218 railroad cars. Two troop concentrations, 1 motor transport park, 5 gun positions, and 3 marshalling yards were attacked. Combat sorties totaled 679; claims were 5-0-2 (air) and losses were 7.

19 August

A cold front, moving across our bases and target areas from west to east, sharply curtailed air operations. Several successful missions were flown in the morning, but the front closed down our bases in the afternoon, then moved into the target areas. Results included destruction of 20 Seine River barges and damage to 91 more; other ground targets smashed or damaged were 18 motor vehicles, an armored vehicle, 2 locomotives, 9 railroad cars, and 2 power launches. Two gun positions were attacked and a rail line cut. There were 212 combat and 34 reconnaissance sorties.

Sharp aerial combat occurred, with 9 enemy aircraft destroyed (8 in the air) against loss of 5 planes and pilots.

While strafing FW–190's on the ground near Pontoise, the 406th Group's 513th Squadron was bounced by a number of enemy fighters. When the 512th Squadron tried to help, it in turn was attacked by 30 to 40 aircraft at 8,000 feet. The enemy kept some of his aircraft above the overcast, sending them down in twos and fours to take part in the fight. Final claims were 5–0–3 in the air and 1 on the ground for loss of 5.

20 August

Shortly before dark, 406th Group pilots reported the main highway from Paris to Sézanne loaded with dispersed enemy motor vehicles headed east. Marshalling yards at Joigny and Sézanne were likewise loaded. Obviously the Germans were pulling out of Paris.

Rain and low ceilings limited combat sorties to 388 and reconnaissance sorties to 36. Claims in aerial combat were 6–0–1 and losses were 3.

Eight P–47's were bounced by 12 Me–109's and 20 FW 190's at 3,000 feet about 12 miles southwest of Paris at 1545. Despite the odds of 4 to 1, the Thunderbolts destroyed 6 and damaged 1 for a loss of 2 planes. A third P–47 was lost on a later mission.

21 August

All XIX TAC combat aircraft were grounded throughout the day by the worst weather of the month. A warm wave in conjunction with a cold front caused low ceilings and rain over the entire northern portion of France, restricting air operations to a single uneventful reconnaissance sortie flown along the Loire in the Angers area.

22 August

Increasing vulnerability of the GAF, driven from some of its best fields to landing grounds north and northeast of Paris, was demonstrated when XIX TAC fighters destroyed 20 enemy fighters for the loss of 1. Complete claims were 16–3–1 in the air and 4–0–4 on the ground. Feature of the day was provided by the P–51's of the 354th Group. Fifteen of them, on a fighter sweep, destroyed 12 ME–109's without loss—8 in the air as they were taking off from a grass field 5 miles east of Epernay, and 4 on the ground by strafing.

Flying 333 combat sorties, our aircraft dropped 16.75 tons of GP bombs and 26 fragmentation clusters, plus 18 leaflet bombs. Reconnaissance sorties totaled 60.

23 August

With the enemy endeavoring to give increased air cooperation to his hard-pressed ground forces, especially along the Seine west of Paris, the Third Army reported that the 79th Infantry Division bridgehead in the Mantes-Gassicourt sector was attacked by rocket planes intermittently during the day. Although our air cover in the area was tripled, no rocket-firing planes were seen.

Flying armed reconnaissance ahead of our columns thrusting east past Sens and Troyes, P–47's had just dropped eight 500-pound bombs on a gun position east of Joigny when Combat Command "A" of the 4th Armored Division reported it was being strafed 12 miles northeast of Sens. The remaining bombs were jettisoned, and the Thunderbolts, from 9,000 feet, bounced five ME–109's at 6,500 feet, shooting down two and probably another for no loss. In all, 463 combat and 70 reconnaissance sorties were flown, in spite of poor visibility, cloud, and showers over bases and targets during a part of the day. Claims against enemy aircraft totaled 5–4–7 for loss of two, one of which was to flak.

Word was received that Paris had fallen. Another phase had come to an end.

24 August

Foul weather continued to plague XIX TAC pilots, low ceilings and poor visibility over the target areas in the vicinity of Paris restricting combat activity to 12 missions of 164 sorties. The enemy also was handicapped; no German planes were seen.

Rocket-firing P–47's launched 12 projectiles at 105-millimeter guns near Nantes and claimed 4 destroyed and 2 damaged. Five 88-millimeter guns also were attacked. Forty carts of an ammunition convoy were blown up, and other aircraft did a little "working on the railroad." No high explosive bombs were carried, but rockets and strafing destroyed or damaged 55 railroad cars, 2 locomotives, 68 motor vehicles, 3 tanks and armored vehicles, and 40 ammunition cars; 12

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field-gun positions were attacked and 2 headquarters left burning. Twenty-nine reconnaissance sorties were flown.

25 August

As was set forth in the preceding narrative section, this was a fateful day for the Luftwaffe, with both the Ninth and the Eighth Air Forces knocking German aircraft out of the sky. XIX TAC's share of the kill was 36–1–8 in the air and 18–4–0 on the ground, or 54–5–8 all told, against a loss of 8 planes and 7 pilots.

There were renewed evidences that the Luftwaffe was finding its bases in the Paris area too hot to hold, as demonstrated by the GAF fighters seen streaking eastward with belly tanks. The Germans were destroying facilities as fast as they could, in the face of the steady advance of armored forces.

Flying 632 combat sorties, XIX TAC claimed the following results against ground targets, in addition to the haul in the air: 266 motor vehicles, 4 tanks, 44 locomotives, and 164 cars destroyed or damaged; 5 marshalling yards attacked and 5 lines cut; 3 field-gun positions, 4 troop concentrations, an ammunition dump, and 8 military buildings destroyed; 5 airfields attacked and 2 hangars wrecked. In antishipping operations off Brest, 2 naval vessels were claimed as destroyed, and 3 naval and 9 merchant vessels damaged. Four P–51's flew artillery-adjustment sorties for corps artillery at Brest, noting many hits on enemy gun positions and shipping. Reconnaissance sorties totaled 64.

26 August

After his heavy air losses of the previous day, the enemy avoided combat with our fighters, and the day's cash register rang up only 2 enemy aircraft destroyed and 1 damaged, all 3 on the ground.

Our groups on armed reconnaissance, patrols, and armored-column cooperation flew 528 sorties. Four planes were lost.

Indications were seen that if the enemy could muster sufficient numbers, he might bring jet-propelled fighters into action against XIX TAC soon. A probable Me–262 twin-jet-propelled fighter was sighted on 25 August, and on the 26th contrails at 20,000 feet, traveling at an estimated speed of 500 miles per hour, were reported.

27 August

With American forces now across the Marne at two points near Meaux and advancing rapidly, German fighter bases along that historic river quickly became untenable and the remnants of the Luftwaffe in eastern France were forced to pull out.

Enemy fighters were again conspicuously absent. The only aerial combat claims were by two tactical reconnaissance P–51's, which were bounced by 12 ME–109's. One ME–109 was destroyed, one probably destroyed. Three of the Command's total losses of 8 planes for the day were suffered by the 10th Reconnaissance Group. One was shot down by small-arms fire while directing artillery at Brest, and 2 others failed to return from a mission in the Dijon region.

Cooperating with ground forces at Brest, XIX TAC fighter-bombers scored at least 9 direct bomb hits on 2 gun positions, put several Napalm bombs in a target area marked by smoke, and damaged 3 merchant vessels. Considerable execution against enemy troops and transport was wrought, and railroad tracks were cut at 5 places.

In all, 650 fighter-bomber and 63 reconnaissance sorties were flown.

28 August

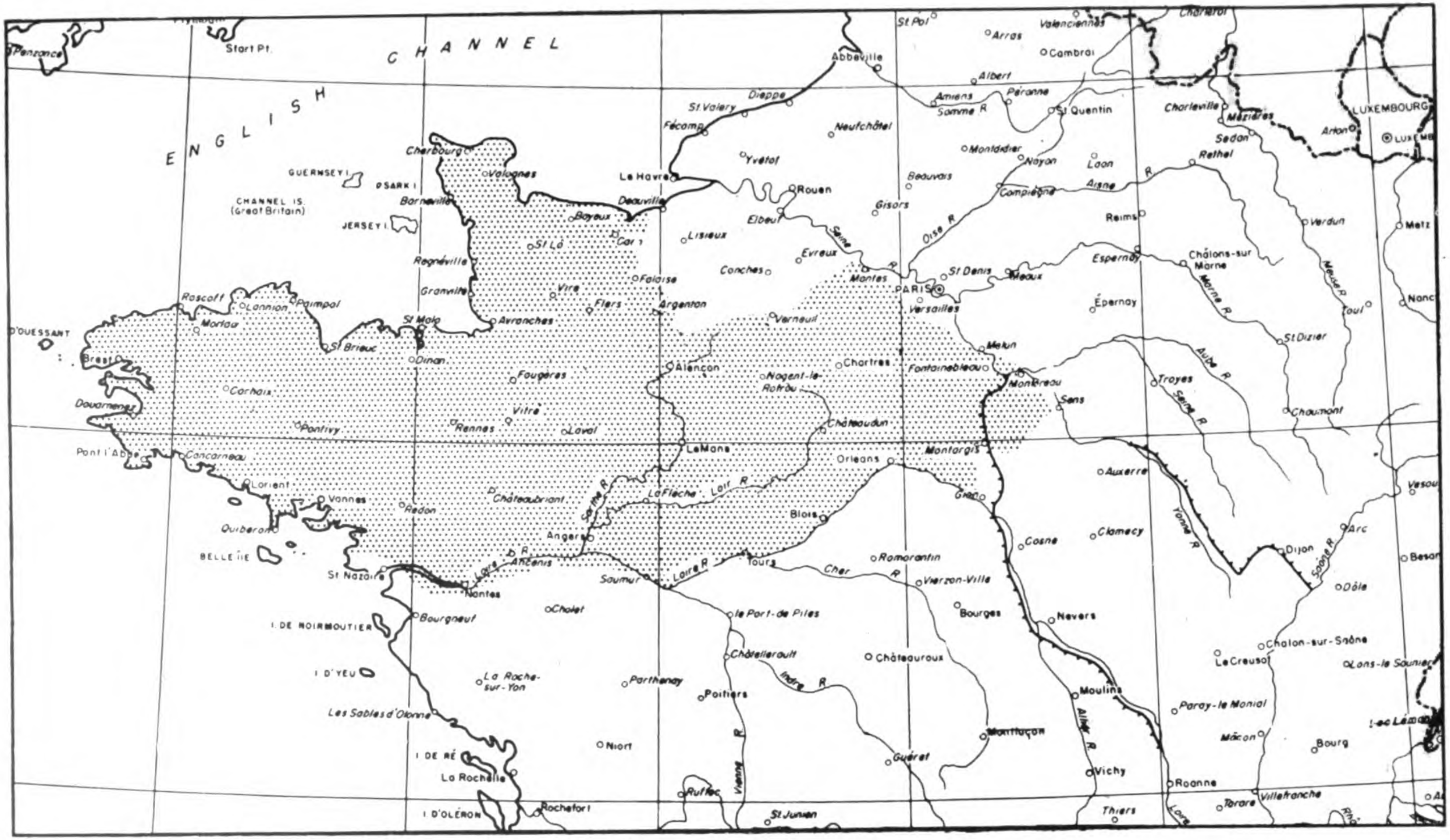
Low cloud during much of the day held operations to 196 combat and 88 reconnaissance missions. During brief periods of flyable weather, telling attacks were made on enemy units trying to escape northeastward into Germany from the Dijon-Besançon locality. In the course of these operations, 11 enemy aircraft were destroyed by bombing and strafing an airfield near Neufchâteau. Claims for the day were 3–0–0 in the air and 11–0–0 on the ground, with 3 losses.

29 August

Weather—completely unflyable. Only one combat mission was undertaken and no targets were attacked, the pilots being forced to return to base 30 minutes after take-off.

30 August

A cold front was sweeping over western Europe, and the resultant low ceilings and rain continued to blot out our bases and target areas.



Ground Situation, 22 August 1944

All XIX TAC operations were "scrubbed" except for two weather reconnaissance sorties. Control of XIX TAC operations now shifted far eastward from the vicinity of Lavel to a new advanced headquarters site in the Forêt de Marchenoir, between Orléans on the Loire and the airfield at Châteaudun.

31 August

In cooperating with the Third Army, XIX TAC flew 18 missions consisting of 313 sorties, dropping 60.75 tons of general-purpose bombs, 39 tanks of Napalm, and 16 leaflet bombs. Twenty rockets were discharged and considerable strafing was done. There were no claims against enemy aircraft and no losses.

Recapitulation

During August, aircraft of XIX TAC flew a total of 12,292 fighter-bomber sorties. In all, 114 aircraft were lost, but many of the pilots bailed out safely over friendly territory, or found their way back through enemy lines. Our pilots claimed 163 enemy aircraft destroyed in aerial combat and 66 on the ground. Complete claims follow:

	Destroyed	*Probably Destroyed*	*Damaged*
Enemy aircraft (in aerial combat)	163	16	34
Enemy aircraft (on ground)	66	4	28
	229	20	62

Figures give only a partial picture of the results obtained during this crowded month of operations, since smoke, dust, and the fleeting nature of fighter-bomber attack frequently make assessment impossible. After many attacks which pilots simply dismissed as "NRO" (no results observed), ground troops reported "guns silenced" or "results excellent," and were seen to move forward.

Pilots' claims against ground targets include destruction or damaging of the following:

4,058 motor vehicles
466 tanks and other armored vehicles
598 horse-drawn vehicles
246 locomotives

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2,956 railroad cars
155 barges and other river craft
18 merchant vessels
8 naval vessels

Stationary targets attacked by bombing or strafing, or both, include the following:

22 gun positions
39 marshalling yards
11 ammunition dumps
13 fuel and supply dumps
3 radar installations
17 airfields
7 headquarters
44 troop concentrations and bivouac areas
58 barracks and other enemy buildings
122 rail lines

Reconnaissance aircraft flew a total of 599 missions during August, of which 522 were successful. Missions flown consisted of the following:

Tactical reconnaissance	329
Photo reconnaissance (day)	258
Photo reconnaissance (night)	12
Total	599

Part III

Notes on Organization, Tactics, and Technique

THE FOREGOING pages have given an account of the exploits of the XIX TAC–Third Army air-ground team, which wrote an entirely new page in the history of warfare. Behind this impressive success lies a story of preparation and planning, of experimentation, of intelligent improvisation. Some aspects of these often unsung activities are considered below.

General.—The operations of XIX TAC in the field proved the basic concepts of FM 100–20 to be fundamentally sound.

The order of priority of tactical missions was:

1. Attainment and maintenance of air superiority
2. Isolation of the battlefield
3. Close air cooperation with ground units in combat

Air liaison officers.—Air liaison officers were used by XIX TAC and proved of extremely great value. However, it became apparent in the early stages of rapid advance of Army divisions that one air cooperation party per armored division was inadequate. The armored divisions of the Third Army habitually advanced in two or three columns, each making up a combat command. Because of their physical separation and rapid movement, it was found necessary to provide an air cooperation party for each combat command. A sufficient number of air cooperation parties, complete with equipment and operating personnel, to work with each advancing column is an arrangement which serves best to achieve the desired results. In the campaign here discussed such parties were improvised.

Communications.—Wire communications for the Command, and control among the various elements of XIX TAC, proved unsatisfactory under conditions of rapid advance. This resulted from long lines of communication; cutting of lines by saboteurs; shortage of wire; shortage of repeater and carrier equipment; shortage of maintenance, construction, and operating personnel. These were formidable obstacles which make all the more admirable the ability of XIX TAC to maintain even sketchy communications throughout a kaleidoscopic campaign.

Tactical air control.—The assignment and operation of a fighter control center with fighter wings proved unsatisfactory for offensive tactical air control purposes. To overcome this, all aircraft warning units, fighter control squadrons, and radio intercept service were organized into a provisional tactical control group and placed directly under the control of Advanced Headquarters XIX TAC. Elements of the tactical control group were maintained very close behind the advanced ground troops and close to, but not necessarily with, the Advanced Tactical Air Command headquarters.

Supply and transportation.—An adequate air service command and aviation engineer command are absolutely essential to the mobile tactical air force and have proved their worth in the European theater. Because of the pooling of motor transportation in the communications zone, the air service command has not always been able adequately to supply or move the tactical units. General Weyland held the belief that the air service command in the theater should have sufficient motor transport to move and supply the tactical units over distances up to 300 miles, and that the service team should be an organic part of the combat group in a mobile tactical air command.

Airdrome squadrons.—Airdrome squadrons proved invaluable in maintaining tactical operations by refueling and rearming units at advanced landing grounds. They also proved their worth in temporarily servicing tactical groups at new airdromes while the groups' personnel was being leapfrogged forward.

P–47 aircraft and API ammunition.—The P–47 airplane has been extensively used with very great success in strafing locomotives, trains, motor transport, horse-drawn transport, and armored vehicles. Armor-piercing, incendiary ammunition was shown to be far more effective on these strafing operations than the mixed loading of two armor-piercing, two incendiary, and one tracer. Likewise, it has been found much more effective in use against hostile aircraft in the air and on the ground.

Rockets.—XIX TAC thoroughly tested the trackless, high-velocity, 5-inch rocket under combat conditions. It was accurate and especially effective against tanks, armored vehicles, locomotives, and gun positions. It was found to add little to the plane in weight and to detract little in speed and, considering its flexibility, it was regarded by XIX TAC as an extremely valuable tactical weapon.

Armored-column cover.—The practice of assigning to one fighter-bomber group the task of providing continuous cover for one armored column during daylight hours proved most satisfactory. Groups were directed to furnish 8 to 12 aircraft for cover to armored columns. As each flight approached, the leader checked in by radio with the flight leader being released, also with the air-cooperation-party radio on the ground. Suitable targets left to be attacked were passed to the flight picking up the patrol. Standing operating procedure was for flights to patrol ahead to a distance of 35 miles, seeking out possible strongpoints or pockets of resistance which might hamper the forward movement of our armor. Such targets were attacked and were also reported to the armored column.

The German camouflage discipline was excellent. After 15 or 20 missions, however, pilots could pick out irregularities of shadow along roads, which disclosed the presence of the enemy.

Both the number of planes, 8 or 12, and their bomb loads varied with the amount of enemy armor opposing the movement of our column and with the likelihood of encountering enemy aircraft. For example, in the area between Le Mans and Fontainebleau, where few thick-skinned enemy vehicles were met, it was possible almost to dispense with carrying bombs, since the desired results could be obtained by strafing. In the Mantes-Gassicourt region, close to Paris and the enemy's fighter fields, only one-third of our aircraft were bombed up, because of the frequency of brushes with enemy planes.

It was conclusively proved that our .50-caliber API ammunition could destroy enemy armor, and did so. Pilots repeatedly reported tanks being set afire by low-altitude strafing from the rear. Evidently ricochet bullets found their way into the engine section through exhaust and cooling vents.

Air-ground communications.—At the outset of the campaign, "C" Channel was used for all communication between aircraft and ground forces. However, this channel proved to be badly overcrowded, and early communication difficulties were overcome by assigning frequencies as follows: Button A—group frequency and homing; Button B—air-ground communication with VIII and XII Corps; Button C—

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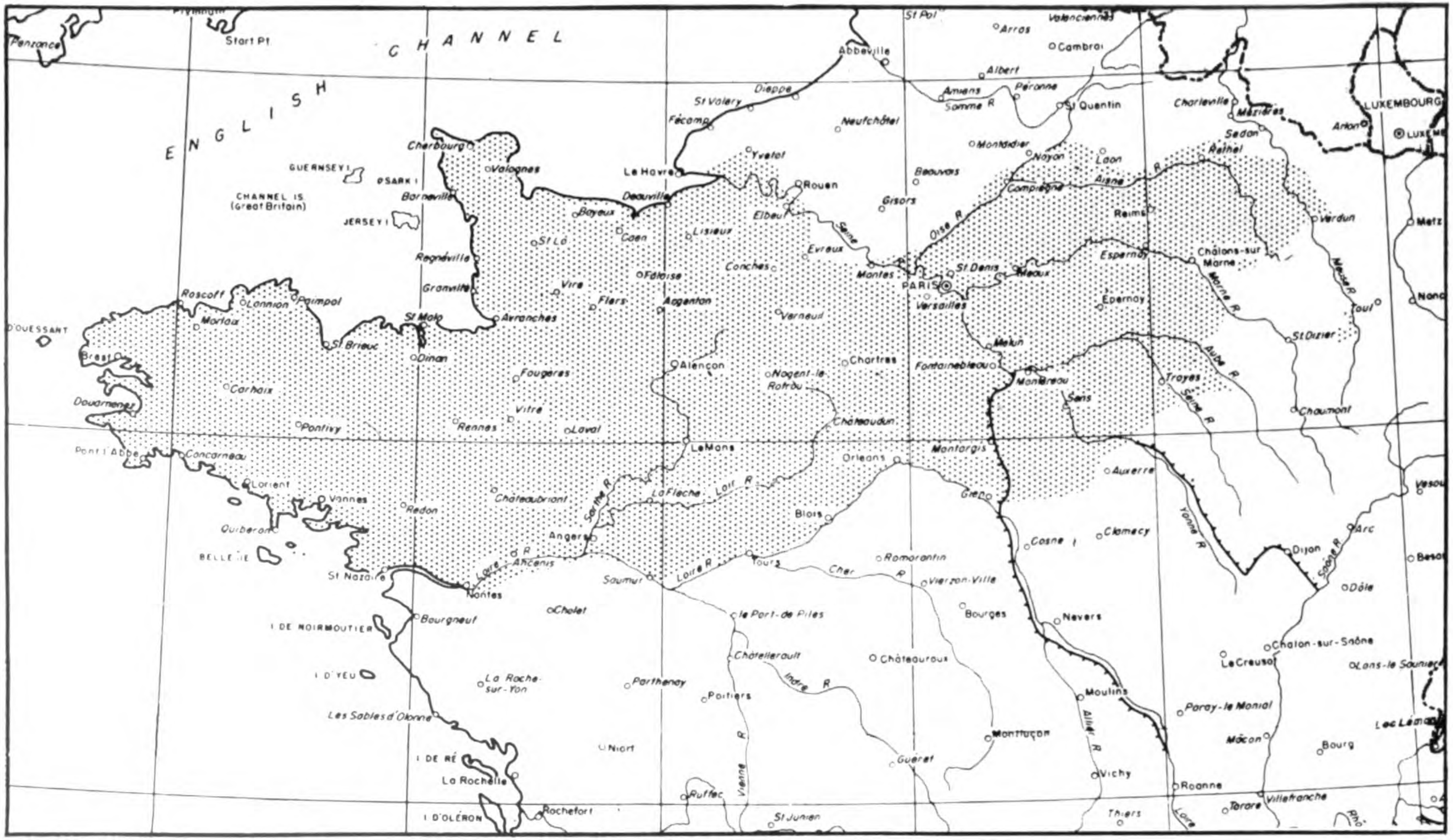

Ground Situation, 1 September 1944

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communication with all aircraft of Ninth Air Force; Button D—air-ground communication with XV and XX Corps.

Altitude of operations.—Operations under 3,500 feet were found to be impractical for fighter-bombers because of the damage inflicted by the intense light flak encountered over concentrations of enemy troops. The P–51 was much more susceptible to serious damage by light flak than the P–47, because of the former's liquid-cooled engine and its somewhat lighter construction.

Minimum weather.—For dive bombing, XIX TAC operations required a 5,000-foot ceiling with broken cloud. For armed reconnaissance the minimum was 3,500 feet with broken cloud. For take-off from base, minimum conditions were 1,000-foot ceiling and 3-mile visibility.

Frequency of operation.—Two group missions, or six squadron missions, per day per group proved to be the most desirable average scale of effort. XIX TAC squadrons had been reduced in number from 16 to 12 planes, since this gave increased flexibility and was adequate for any task encountered. Two group sorties daily thus meant 72 individual aircraft sorties, and it was found that this scale of effort could be maintained day in and day out without affecting maintenance. As a general policy, each group was allowed one day off for maintenance every 7 to 10 days. Also, two missions with 12-plane squadrons were the maximum that could be supported with the flow of replacement aircraft.

Bomb-loading.—The most frequent loading consisted of 500-pound general-purpose bombs with instantaneous fuze. This bomb was found suitable against most military installations not protected by reinforced concrete or heavy masonry. The 500-pound general-purpose bomb was also used satisfactorily, with 8- to 11-second delay fuze, for cutting railway lines, the bomb being driven into the side of an embankment by minimum-altitude skip-bombing methods. With a 6- to 12-hour delay fuze, the same bomb was dropped on highways to discourage movement at night. When the Germans were trying to escape across the Seine, these bombs, with long-delay fuzing, were dropped into the water close to the ferry slips.

Fragmentation bombs were used less extensively than the 500-pound GP because this swift, "end run" type of campaign offered fewer opportunities for their effective employment. The Argentan pocket was

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an outstanding exception; fragmentation bombs were used there with excellent results. Fragmentation clusters and, to a smaller extent, the 260-pound antipersonnel fragmentation bomb, were employed against personnel and thin-skinned vehicles.

Napalm was found to be a very good weapon if properly employed on suitable targets. It has two important advantages among others; it can be dropped from a low altitude without danger to the aircraft, and it completely smothers the target with intense flames, burning everything combustible and destroying personnel by anoxia, carbon monoxide poisoning, and burning. It is particularly adapted to attack on deep shelters, because of its effect upon the ventilating system. In attacks on gun positions the effectiveness of artillery pieces was impaired or destroyed by Napalm's intense heat. For Napalm, the regular belly tank (usually the 150-gallon type) was used, with a detonator but no fins. Dropping was done from minimum altitude by visual methods, without use of a sight.

Virtually no 1,000-pound bombs were used during the mobile warfare of August, two 500-pound bombs proving more effective for most purposes.

Radius of action. Effective radius for the P–47 with full bomb load but without spare tank was 200 miles; the 150-gallon tank increased this to 350 miles. For the P–51 the radius was 325 miles on fighter sweeps without tanks, or about 600 miles with 150-gallon tank, although so much range was rarely needed in tactical operations of the type conducted by XIX TAC.

Airfield surface.—A minimum of 5,000 feet proved necessary for taking off with full tank and two 500-pound bombs, since most XIX TAC fields had a dip or roll and acceleration was not so rapid as on a hard-surfaced runway. Hessian waterproof material was very satisfactory when laid on a graded surface. Considerably better than such landing grounds, however, were established airfields captured from the Germans and repaired, such as those at Rennes, Châteaudun, and St. Dizier. Such fields had extensive dispersal areas and were large enough to accommodate two groups.

Flank protection.—The swift pace of General Patton's advance posed many new problems, one of the most demanding of which was protection of the long flank along the Loire. The task of watching that flank and preventing any dangerous concentration was turned over entirely to the air, an important decision which, as has been noted, marked a forward stride in the history of warfare. This task was successfully carried out by vigilant tactical and photographic reconnaissance backed by fighter bombers, which were continually attacking enemy troops and transport, interdicting movements by road and rail, and keeping the enemy constantly off balance so that small units had little chance to "snowball" into effective opposition. The full results of these efforts were not apparent until the middle of September, when the German general commanding 20,000 troops south of the Loire surrendered, with all his officers and men, to the U. S. Ninth Army and to the Commanding General, XIX TAC. His capitulation resulted from three factors: relentless air attack, effective action by the French Forces of the Interior, and the cutting of the only remaining escape route by the junction of the U. S. Third and Seventh Armies.

Operations on fronts 350 miles apart.—When Brest still held out, and the Third Army's main attack meanwhile moved well to the east of Paris, XIX TAC found itself operating simultaneously on fronts 350 miles apart. This proved entirely practical because of the flexibility and range of air power.

Situation map.—So rapid was the advance and so wide the extent of the front that it was found impracticable to continue maintaining the general situation on a map of 1: 100,000 scale. General Patton's spearheads were constantly running off the map, even though it was maintained on boards aggregating 16 feet long and 8 feet high. Accordingly, the 1: 250,000 map was substituted and served satisfactorily.

Reconnaissance and intelligence.—Reconnaissance, intelligence technique, and teamwork between the A-3 and A-2 sections improved materially in the course of the month, an improvement reflected in the results achieved in hunting down the enemy's air force and catching his aircraft on the ground, in attacking enemy transport attempting to escape into Germany from south of the Loire, and in providing direct cooperation with the ground forces.

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The AAF in Northwest Africa

AN ACCOUNT OF THE TWELFTH AIR FORCE IN THE NORTHWEST AFRICAN LANDINGS AND THE BATTLE FOR TUNISIA

An Interim Report

Published by Headquarters, Army Air Forces
Washington, D. C.

Office of Assistant Chief of Air Staff, Intelligence

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MAR 25 '47

FOREWORD

THIS is the sixth in a series of interim reports published by Headquarters, Army Air Forces. It is based on reports prepared by the historian of the Twelfth Air Force on the basis of official records and firsthand observation. These accounts have been abridged and edited in order to provide for combat personnel in all theaters a succinct summary of the planning and execution of the tactical use of heavy bombardment in the invasion of Northwest Africa.

The conscientious and able work of staff personnel in the theaters makes possible the publication of this series, the intent of which is to cover the more important campaigns and individual missions in all theaters of operations.

Comments and criticisms are invited. They should be addressed to: The Commanding General, Army Air Forces, Assistant Chief of Air Staff, Intelligence, Washington 25, D. C.

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An Account of the Twelfth Air Force in the Northwest African Landings and the Battle for Tunisia

PART I

The Twelfth Air Force in the Landing Operations

IMPATIENCE had reached its peak. The Soviet Union was loudly demanding that the Western Allies open a second front. British and American military leaders were harriedly explaining that they wanted to be sure of sufficient strength before committing forces to such a task. Small but vociferous groups on both sides of the Atlantic were clamoring for aid to the hard-pressed Soviet forces. Everywhere the question was being asked, "When?"

It was thus all the more electrifying when, on 8 November 1942, the word was flashed that Allied forces had landed in Northwest Africa. The war was being brought, if not immediately to Fortress Europe, then to its most vulnerable approaches.

Of great importance and effectiveness was the part in that invasion and in the later battle for Tunisia of the United States Twelfth Army Air Force. This booklet relates the role of that organization from the time the initial assault was made on the Axis buffer territory of Africa to the time when the *Herrenvolk*, beaten and disillusioned, were compelled to withdraw to Europe itself, there to find little comfort in the certainty that the forces they had set in motion could not be halted.

NOTE.—The grades of officers mentioned in this booklet are those which they held at the time of the events described herein.

There were four chief purposes in undertaking the invasion:

1. To open the Mediterranean to Allied shipping. This would shorten the haul from the North Atlantic to India and, by making unnecessary the longer route around the Cape of Good Hope, vitally increase the number of round trips which Allied shipping could make to the Orient.
2. The opening of the Mediterranean would be an effective counter to the Axis *Drang nach Osten,* which was in danger of reaching out to meet the Japanese push toward India, and the success of which would have split the United Nations into two segments.
3. Allied control of the Mediterranean would make it possible to invade Europe through Italy, the "soft underbelly" of the Axis. Italy would thus afford a springboard for further invasions, would draw part of the German strength from the Russian front, and would give strategic bombers a base within effective distance of hitherto inaccessible Axis installations.
4. Last, and not by any means least, the movement would deal a serious blow to the morale of Germany and her satellites, would raise Allied morale, and would encourage those elements in the Axis-occupied countries which were working as best they could toward the defeat of the Axis.

It was planned to strike simultaneously at Casablanca, Oran, and Algiers. It was also planned that at about the same time the British Eighth Army would break Rommel's El Alamein line and advance into Tripolitania to meet the spearhead of invasion which would sweep eastward from Algiers.

Attitude of the French Toward the Allies

Certainly, it was believed, Germany would occupy Vichy France immediately upon receiving the news of the invasion, in order to forestall an Allied breaching of the southern coast of France, to establish submarine and air bases, and to control the French fleet then based at Toulon. Intelligence determined that Frenchmen in Northwest Africa probably would be neutral and that the natives would be apathetic. Civil servants, interested in their salaries and pensions, would be content to jog along under the Viche régime.

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The Navy, with a long and proud tradition and composed largely of Bretons, was violently anti-British. This attitude had been strengthened by British attacks on French naval units at Oran and Dakar in 1940, and by suspicions of British designs on Bizerte. It was anticipated that the fact that the United States had now joined the British would make little difference; indeed, the French Navy considered that Anglo-Saxon sea power was a threat to the continued existence of the French colonial empire. The loyalty of the French Navy, it was evident, was not so much to Vichy as to the Service, and this loyalty among enlisted personnel was heightened by their interest in ratings and pensions, to obtain which absolute conformity to the naval hierarchy was necessary.

The French Army, on the other hand, better reflected the attitude of most metropolitan Frenchmen. Marshal Pétain was personally popular, and his dealings with Germany were condoned as unavoidable. The officer corps was, to say the least, anti-foreign, but junior officers and the rank and file were inclined to favor the United States. For this reason it was decided to emphasize the American character of the invasion. The difference between the Navy and the Army was demonstrated by the resistance which each was to offer.

There were additional factors which might urge the French to cooperate. The American continuance of relations with Vichy had convinced many Frenchmen of our good will, and the United States had not been involved in British actions against French colonies. The Axis had not occupied French Africa, but its armistice commissions had stripped the country of food and had reduced the population to a hand-to-mouth existence. The French Army was being slowly deprived of its weapons and the Navy was short of fuel. These experiences were gradually convincing the French that they could not do business with Hitler and were arousing them from their apathy. There was a chance that an Allied invasion, if predominantly American, might meet with some degree of welcome.

Danger from Spain

It was realized that Spanish sympathies were pro-Axis and that the Spanish fascist government hoped to fish in troubled water and catch the control of all or part of French Morocco. This might not be possible without German collaboration, but the whispered suggestion of a projected Allied seizure of Dakar brought forth rumors that in such event Spain might move into French Morocco. Though the Allied ambassadors had assured Franco himself of our determination to respect Spanish neutrality, and though Franco was thought for economic reasons to favor continued neutrality, there was the possibility that German pressure might cause him to throw in his lot openly with the Axis. Already Spain was selling vital supplies to Germany, and German agents were allowed to operate freely on both sides of the Straits of Gibraltar. For these reasons it was felt by the Allied command that the seizure of Casablanca was a necessary part of the movement into Northwest Africa. Moreover, it would be essential to maintain on the border of Spanish Morocco a force sufficient to meet any invasion which Franco or the Axis might launch.

Planning for the Northwest African invasion began on 18 July 1942, when American and British officers met at a conference at Norfolk House, London, under direction of Lt. Gen. Dwight D. Eisenhower. From the first, every effort was made to promote real unity of command, for anything falling short of this jeopardized the chances of success in the proposed invasion. To meet this necessity, staff officers were chosen from both nations with regard to their fitness. In some sections national differences in procedure made it necessary to appoint opposite numbers of both nationalities. General Eisenhower was the supreme commander and Adm. Sir Andrew Browne Cunningham was naval commander in chief. The American Twelfth Air Force was under command of Brig. Gen. James H. Doolittle, and the RAF under Air Marshal Sir William Welsh.

The principal snag in planning was struck when it came to deciding upon the focal areas of attack. The invasion would strain Allied resources, which were woefully weak in landing craft, freighters, troopships, and avilable combat units. The Americans maintained that the Spanish menace dictated landings at Casablanca, to which they were willing to add Oran, but the British favored Oran, Algiers, and if possible Philippeville and Bone; the reasoning was based on the cogent assumption that if Tunisia were to be seized promptly it was necessary to land as close to it as feasible. In the end it was decided to include Casablanca, Oran, and Algiers, but the discussions delayed the movement for about three weeks. It was also decided to modify the American character of the invasion by adding more British combat units in the Algiers area.

The period of a new moon being most favorable for landings, the date of the invasion was set at 7 October. This was later changed to 4 November, and again to 8 November. Casablanca was assigned to the Americans under Maj. Gen. George S. Patton, and the planning for this phase was accomplished chiefly in Washington. The Oran force, also American, was under Maj. Gen. Lloyd R. Fredendall. In order to give an American color to the Algiers force, which was combined British and American, Maj. Gen. Charles W. Ryder was made commander; upon the fall of Algiers the command was to pass to British Lt. Gen. K. A. N. Anderson.

The Oran and Algiers invasions were to occur simultaneously. It was hoped that the Casablanca landing could be made at the same time, but this was rendered problematical by the notorious fact that in the late autumn only one out of five days would be suitable for amphibious operations. The American Navy was to cover the Casablanca effort, while the British Navy was to operate in the Mediterranean. In addition, the British provided a strong naval force to watch over the Italian and Vichy French navies, and another to patrol between the Azores and Gibraltar.

American troops at Casablanca and Oran were to unite to guard the border of Spanish Morocco, while General Anderson's British First Army would push on to Tunisia. The Twelfth Air Force was to remain in the west, Casablanca and Oran, while the RAF would cover the British advance.

American diplomats in French North Africa reporting that certain army and air force elements would welcome the coming of Allied forces, a deputation of American officers headed by Maj. Gen. Mark W. Clark landed near Algiers on the night of 22–23 October for a series of conferences. Meanwhile the Americans were negotiating with Gen. Henri Giraud and planned to bring him to Africa in a submarine.

Air Planning of the Invasion

Gen. H. H. Arnold and Maj. Gen. Carl Spaatz agreed that air bombardment from the United Kingdom and air activities based on the Middle East were essential concomitants to any movement into North-

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west Africa, and that nothing should be allowed to interfere with either. Moreover, the Northwest African venture must be exploited by a build-up of strategic bombers.

Plans had already been made for the activation of the Twelfth Air Force, but it did not appear officially until 20 August 1942, when it was activated at Bolling Field. On 5 September the Headquarters and Headquarters Squadron left New York, landing in Scotland on the 11th. General Doolittle assumed command on 23 September 1942. Prior to that time, personnel were a part of the Eighth Air Force and were known either as Eighth Air Force Junior or simply as Junior. General Doolittle arrived in the United Kingdom on 6 August 1942.

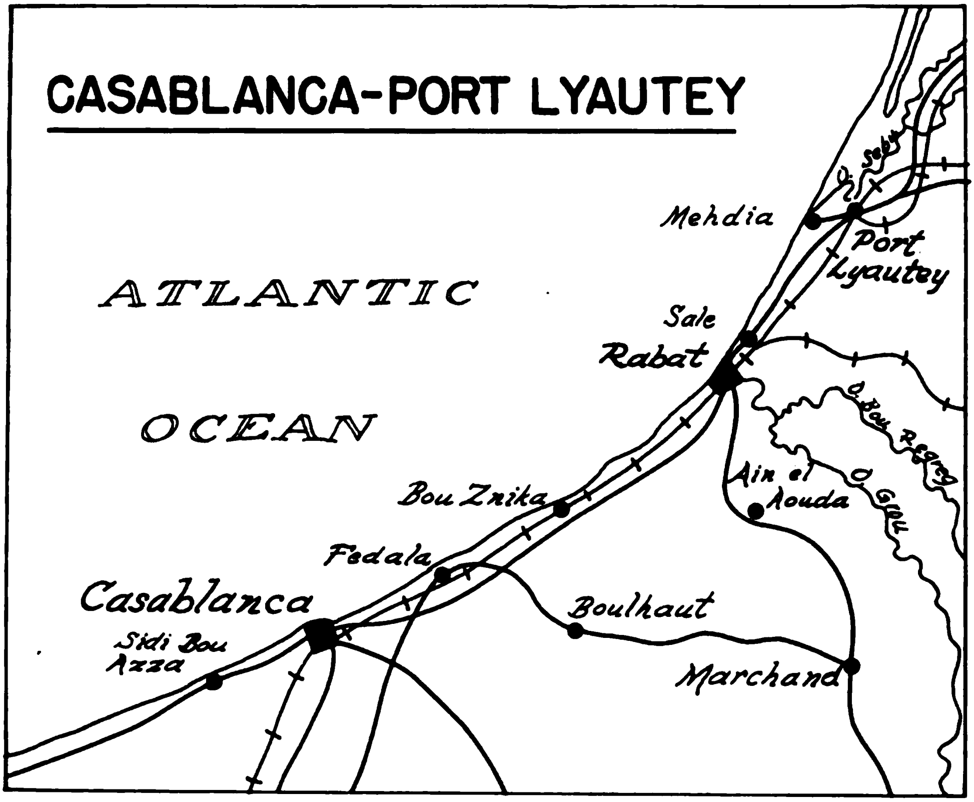
On 31 August General Spaatz forwarded to the Commanding General of the European Theater the following points dealing with the timing of the planned operation:

1. A minimum of three weeks' notice was required to make motor changes, tune planes, pack, crate, and mark equipment, and otherwise to prepare air units for movement from their stations.
2. It would be impossible to carry out any tactical operations during this period.
3. Additional time might be needed to replace shortages of equipment. This condition of shortages would probably prevail in the new theater, due to ship sinkings and the fact that supply depots were not yet functioning on a completely effective basis.
4. Additional time would also be needed for movements to the ports and for loadings.

It was proposed that the Casablanca end of the invasion should receive air cooperation from the XII Air Support Command, then being activated and organized in the United States. It would in effect be a miniature air force, with bomber and fighter wings.

The RAF was to accompany the Algiers landing. The main body of the Twelfth Air Force was to proceed from the United Kingdom to Oran, this body to consist of XII Fighter Command and XII Bomber Command, with the addition of the 51st Troop Carrier Wing.

As political and meteorological considerations urged the invasion at the earliest possible date, it was necessary to assign units already trained; to accomplish this, the Eighth Air Force was temporarily



all but stripped of units. Staff officers and organizations set apart to reinforce the Ninth Air Force in Egypt were switched to the United Kingdom. In all, the Twelfth Air Force was planned to comprise about 1,500 aircraft and 75,000 men.

Plans called for sending the 33d Fighter Group of P-40's into Casablanca as soon as possible after D-day, and to send the 31st Group of Spitfires to Oran. During the next month other units were to follow as rapidly as preparations could be made to receive them; inevitably there were changes made after D-day in the groups originally scheduled to go.

The air program of the Northwest African invasion consisted of three parts:

1. XII Air Support Command under Brig. Gen. John K. Cannon accompanied the Western Task Force at Casablanca.
2. The remainder of the Twelfth Air Force under General Doolittle operated with the Central Task Force at Oran.
3. The RAF Eastern Air Command under Air Marshal Welsh operated with the Eastern Task Force at Algiers.

In addition, U. S. carrier-based naval aircraft were to cover the initial operations at Casablanca and the British Fleet Air Arm was to cover the other two.

The mission of the air forces was threefold:

1. To provide air defense and air cooperation with the initial assault forces, and to protect bases and communications as established.
2. To protect post-D-day convoys, the lifeline of the invasion.
3. To build up an offensive air striking force for strategic bombing of Axis bases and communications, particularly on the continent of Europe.

The Moroccan Landings

The Atlantic coast of Morocco is rocky, with outcroppings extending into the water. Although a few long, shelving beaches are suitable for landing, it is necessary for vessels to lie far out at sea. Harbors are usually formed by breakwaters, and the few natural harbors at the mouths of small rivers are shallow. On the beaches the ground swells are heavy and waves often break at a height of 30 feet. Low pressure over the North Atlantic results in rough water off the Moroccan coast, and as winter approaches these disturbances increase. Since, as has been said, the late autumn affords one feasible landing day in five, it is not surprising that the landings were followed the next day by prohibitively rough seas.

The coast was relatively well fortified with coastal defense batteries, field artillery, antiaircraft batteries, and machine-gun pillboxes. All likely landing areas were protected. Particularly strong was Fedala, about 12 miles northeast of Casablanca, while the immediate vicinity of Casablanca bristled with big guns. The battleship *Jean Bart,* though unable to move, lay at a jetty and added her guns to the defense. Fedala and Casablanca constituted the focal point of the central attack; Mehdia, 80 miles northeast of Casablanca, was the second; and Safi, 130 miles southwest of Casablanca, was the third.

The Amphibious Force, under command of Rear Adm. Henry K. Hewitt, consisted of a strong contingent of battleships, cruisers, aircraft carriers, destroyers, and fleet train vessels, together with an adequate number of troop and cargo ships, with the cruiser *Augusta* as flagship.

It was planned to have a strong covering group shell Casablanca if resistance occurred at that point, with the Northern Attack Group covering the landing at Mehdia, near Port Lyautey, the Center Group covering that at Fedala, and the Southern Attack Group covering Safi.

The Army contingent, under General Patton, consisted of approximately 2,000 officers and 35,000 men. There were about 250 tanks in one armored combat command and an armored combat team, the Third and Ninth Infantry Divisions, and a Ranger detachment. Before the landings were made the following orders were published to all ranks:

1. Leading waves will reach beaches 2½ hours before sunrise.
2. Direct attack will be avoided. The enemy will be pinned by frontal fire and attacked from rear.
3. Attack both day and night will be prosecuted to the limit of human endurance and then continue the attack. Rapid, violent, and continual attack will win.
4. Military or civilian units or individuals offering resistance will be destroyed.
5. Military or civilian authorities or military units displaying conciliatory attitude will be accorded friendly and courteous treatment.
6. Local civilian authorities in captured localities will be urged to continue their administrative and judicial functions.
7. Sultan's palace, houses of worship, mosques, cemeteries, and private homes will not be disturbed or entered unless they are used as defensive works.
8. Women, both European and native, will be treated with the utmost respect. Soldiers guilty of looting or assault on women will be shot.
9. The following will not be damaged beyond temporary interruption to prevent use by enemy:
    a. Power plants and utilities.
    b. Ports and port facilities.
    c. Radio stations at Rabat and Casablanca.
    d. Telegraph and telephone lines between Rabat-Meknes and Rabat-Casablanca.

Off Casablanca was the largest American naval force, with Rear Adm. Robert C. Giffin in command of the covering group, subject to the control of Admiral Hewitt, commander of the Western Naval Task Force. Maj. Gen. J. W. Anderson was in command of ground forces, and General Patton, commanding all ground movements, was present in the area.

Early in the morning of the 8th, French planes attacked the fleet and soon afterward shore batteries, aided by the *Jean Bart,* opened fire. The American vessels returned the fire. The *Massachusetts* paid particular attention to the *Jean Bart,* and succeeded not only in silencing her guns tor the day but also in damaging her so seriously that her stern settled on the bottom. The French fleet stationed at Casablanca included one light cruiser, three flotilla leaders, seven destroyers, 11 submarines, and additional small craft. The *Jean Bart* and three submarines had now been sunk, and three other ships either had been put out of action or were undergoing repairs. Three of the remaining submarines managed to escape. Next, the cruisers, destroyers, and flotilla leaders attempted two sorties, but were driven back with a loss of six vessels. The others retreated to Casablanca.

The Mehdia Landings

The Northern Attack Group was under the command of Adm. Monroe Kelly and the landing troops under Brig. Gen. Lucian K. Truscott, Jr. Soon after midnight on the morning of 8 November the landing craft opposite Mehdia were loaded with troops. The assault was organized in waves, the first one to go in behind three escort vessels, those following to depart at 10-minute intervals. Because of considerable confusion in the darkness the first wave did not reach shore until 0515, one and one-half hours late. Landings were made at five points above and below the mouth of the Sebou River. The central wave, at the mouth of the river, was the only one which met opposition. Batteries which opened fire on the assault were answered by naval fire. At daylight six planes were launched by the fleet for spotting and naval patrol. Soon afterward, two French Dewoitines attacked the ships without result, and 10 others went up to strafe the landing parties.

Broadcasts to the French authorities and to the people of Northwest Africa failed to lessen the resistance, so the landing parties pressed the attack and established themselves well inland. Early the next morning the French started a counteratttack. There were exchanges between the shore batteries and the ships, and the fire of the latter broke up a French tank attack. About 1430 General Cannon arrived in a naval plane and went into conference with Admiral Kelly.

On the 10th the *Dallas* ran up the Sebou River and landed Rangers at the airdrome, which was soon in use by naval planes. Meanwhile, instructed by spotting planes, the naval vessels shelled the French columns and sent out planes to strafe and bomb. American troops stormed the fort on the south bank of the river, supported by dive bombers. Reconnaissance showed that there were no more forces to continue the resistance, and at 0400 on 11 November the order was issued to cease firing.

Landings at Fedala

Beginning at 0525 on the morning of the 8th, four assault waves were landed on the beaches between Fedala and the Neffifikh River. French searchlights which spotted the landing boats were fired upon by the American fire support vessels, and the shore batteries at Chergui and Fedala then opened up. The slight French opposition to the landings consisted of occasional shelling of the beaches. The French Army confined itself to delaying actions. At 1430 Fedala surrendered. Unloading proceeded during the ensuing night, though the loss of landing craft, due principally to waves and tides, reached the appalling total of 64 percent. The armistice at 0400 and the surrender of Casablanca at 2200 hours on 11 November did not hinder French torpedo action, for on the 11th and 12th four of our ships were hit and sunk. These actions had been aided by searchlights at Casablanca, but this aid ceased with the occupation of the city.

The Safi landings were under command of Rear Adm. Lyal A. Davidson and Maj. Gen. Ernest H. Harmon. The principal objective of the move was to land tanks at Safi to keep the garrison of Marrakech from reinforcing Casablanca. From Safi the tanks were to move north to aid in the attack on Casablanca.

The *Bernadou* and the *Cole* were sent ahead into the harbor to seize the installations needed to unload tanks; despite the fire of shore batteries their mission was successful. Ten assault waves were landed on four beaches beginning at 0505 on 8 November, while shore batteries were silenced by fire support ships. Another battery south of

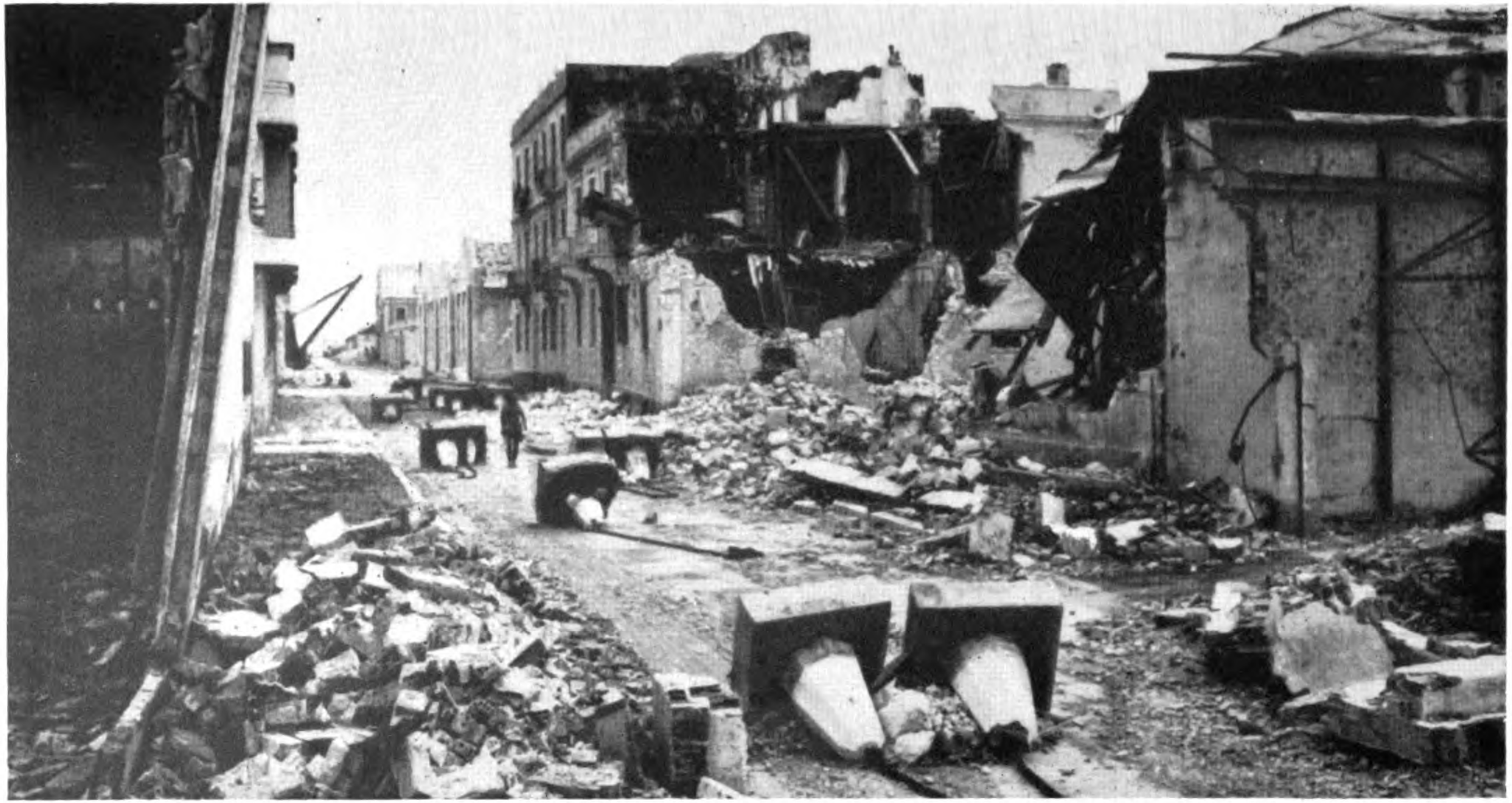
Safi was captured at 1130, and the *Lakehurst* moved into the harbor and began landing tanks at 1500.

French planes strafed the assault waves, but otherwise no army opposition was offered. Air cover was provided by the *Santee* and the *Philadelphia.* On the 9th an air attack on the Marrakech airdrome destroyed or damaged 20 planes and wrecked a hangar. Meanwhile French relief columns coming from the east were attacked by American aircraft and disrupted. On the 10th and 11th American Army tank units bypassed Mazagan and appeared before Casablanca. Strongpoints in the Mazagan region surrendered by midnight, and information was received that hostilities in French Morocco had ceased.

Ground elements of the XII Air Support Command landed on D-day in order to take over captured airfields at the earliest possible moment, and speedily prepare them for our use. The first Command planes to land were 72 aircraft from the carrier *Chenango,* which were flown to Craw Field, Port Lyautey. The field was soft and pitted with bomb craters. Those planes whose undercarriages had not been ruined in landing were later moved to Casablanca. Meanwhile, 35 aircraft were landed from the carrier *Archer,* and B–26's began to arrive from the United Kingdom via Gibraltar. Good airdromes were found at Sale, Rabat, and Casablanca, though the last named had spots which would not bear B–17's. The main effort of the XII Air Support Command was devoted to patrols and to air cooperation with General Patton's troops; it engaged in no air combat. Within a month the Command began a movement eastward which was to result in its entry into the Tunisian fray about the middle of January 1943.

The Oran Landings

The coast in the vicinity of Oran is precipitous except in the west, in the area of Les Andalouses, 12 miles from Oran and 30 miles east of Arzew. The port of Oran lies in a semicircular bay, its artificial harbor bounded on three sides by cliffs. Three miles away, on the western side of the Bay of Oran, is the supplementary harbor of Mers-el-Kebir, also artificial and also at the foot of a cliff. Oran was well defended by coastal batteries, particularly on the high ground



Official Photo USAAF

BATTERED SOUSSE. Bombers of Northwest African Stategic Air Force left this major Axis Tunisian base in rubble before Germans and Italians retreated. Note tank obstructions in shattered street.

between the ports of Oran and Mers-el-Kebir, though few of the guns were long-range. The coastal batteries were manned by naval personnel. There were also some mobile artillery and an infantry division, while Sidi-Bel-Abbes, 35 miles to the south, was the headquarters of the Foreign Legion. The two local military airdromes were at Le Senia, a few miles south of the city, and Tafaraoui, about 15 miles farther south. The French air defenses consisted of a few old antiaircraft and machine guns and a few outmoded fighter and bomber planes.

The Central Naval Task Force was entirely British, though some of the troop transports were American. There were 46 naval vessels, of which three were carriers, and 44 troopships and freighters. The Center Task Force, under General Fredendall, was composed of the First Infantry Division, Combat Command B of the First Armored Division, one battalion of the 503d Parachute Regiment, and the First Ranger Battalion. The missions of this task force were four:

1. To occupy the ports and airfields in the Oran area.
2. To extend westward to meet the Casablanca expeditionary forces.
3. To build up land and air striking forces in case the Axis erupted from Spanish Morocco.
4. To extend eastward to Orléansville to meet the forces coming from Algiers.

The plan of attack envisaged simultaneous landings at Les Andalouses and Arzew, while two British cutters filled with U. S. combat troops would enter the harbor of Oran and seize the shipping and port installations to preserve them from sabotage. The parachute battalion was to be brought from England on the morning of D-day by the 60th Troop Carrier Group and dropped or landed at La Senia or Tafaraoui, depending upon whether the French proved hostile or peaceful. Air cooperation was to be furnished during the early hours by the British Fleet Air Arm, but the 31st Fighter Group was to fly in from Gibraltar during the day.

Two landings were made about 0200 at Arzew, one to seize the harbor and the other the fort. Both objectives were accomplished, but with dawn, scattered guns about the harbor increased their fire until they were captured by Army detachments. Armored Combat

Command B was landed promptly and began a rapid advance upon the airfields of Tafaraoui and La Senia. Two regimental combat teams also began moving toward St. Cloud and Oran. Combat Command B seized Tafaraoui at noon, then moved north toward La Senia. That airdrome, however, held out most of the next day. It was bombed by the Fleet Air Arm and strafed by Spitfires. Upon its capture the batteries above Mers-el-Kebir swung on the field, but were put out of action by Spitfires of the 31st Fighter Group.

Meanwhile the landings at Les Andalouses had been successful, though there was considerable confusion in the darkness. A searchlight illuminating the beaches was extinguished by naval fire. Three French destroyers and an escort vessel sallied from Oran; all were hit and two were sunk. During the morning coastal batteries opened upon the landing beaches and were shelled by the guns of HMS *Rodney*. One combat team advanced toward Oran to seize the heights west of the city, while another column moved on Lourmel airfield.

During 9 November the build-up of forces continued, while forward elements engaged in bitter fighting. By the morning of the 10th the ground forces had pressed their way to the outskirts of Oran, and at 0737 they delivered a coordinated attack. At 1230 the city formally surrendered.

Take-off of Paratroop Operations

One phase of the plan for the capture of Oran included the dropping of paratroops from 39 C–47's of the 60th Troop Carrier Group. Col. William C. Bentley, Jr., was mission commander and Lt. Col. Thomas J. Schofield was group commander. The 39 planes assigned to the mission were divided into four flights. The first two flights, consisting of 19 aircraft, took off from St. Eval, and the other two, made up of 20 planes, took off from Predanneck.

The 556 paratroops engaged in the mission were the 2d Battalion of the 503d Parachute Infantry, commanded by Lt. Col. Edson D. Raff. Two plans were formulated: by the "war" plan most of the paratroops were to jump near Tafaraoui and capture that airdrome; by the "peace" plan the planes were to land at La Senia, where the paratroops were to walk in and receive the plaudits of the multitude.

While the men were standing by their planes on five-minute alert, the order was received to substitute the "peace" plan for the "war" plan, which had originally been thought more probable. Personnel were informed of the change and warned to take off in time to assemble over Portreath in Cornwall at 2200. However, during the night the "war" plan was reinstated, unknown to the mission, a circumstance leading to utter confusion the next day. To add to the general turmoil, the radio boat in the Mediterranean was sending signals on 460 kc instead of 440 kc, as indicated in the Signal Annex and the inadequately informed briefing personnel briefed the crews for Gibraltar. Much time was lost, and when the instructions were given for the actual mission they were very inadequate.

Flights A and B took off at 2120 on 7 November, with C and D taking off at 2105. Rendezvous was made over Portreath at 1,000 feet, and the course was taken from there. The planes had difficulty in getting into formation in the darkness, in some cases collisions being narrowly averted. Ground fog and occasional rains were encountered and these, added to poor radio communication and the failure of some lights to function, made it difficult for the aircraft to keep formation. The dispersal became practically complete when the planes climbed to 10,000 feet for the flight over the mountains of northern Spain. Radio and navigator failure made reassembly impossible, and the C-47's arrived at widely dispersed points over the north African coast. Over the coast of Spain several aircraft were fired upon. Notwithstanding the liberal use of caffein pills, most of the crews had to fight to stay awake. Of three which lost their way, one put in at Gibraltar and two reached Casablanca.

With the dawn arrival in Algeria most of the planes were almost out of fuel and the crews all but exhausted. The crews and parachutists of three planes landing in Spanish Morocco were interned, and the paratroops of a fourth plane were dropped there and also taken into custody.

Near Lourmel a column of tanks was seen and 12 planes jumped their paratroops, but the tanks proved to be American. The airborne troops marched to Tafaraoui, arriving the next day. The change from the "peace" to the "war" plan first became known to the mission when a C-47 encountered flak over Tafaraoui. This plane hastily warned all those it could reach by radio, and an emergency landing field was sought at the west end of the Sebkra d'Oran, a salt lake south of Oran.

During the morning the majority of the aircraft, 28 in number, landed there. The first of this contingent to land, about 0830, was fired upon by two Arab horsemen, and a bullet exploded a parachutist's hand grenade, seriously wounding an officer. The paratroops were organized, the planes dispersed, and the defensive outposts established. A platoon of light tanks reinforced the defense.

Colonel Bentley's plane was among those which reached the Sebkra, but after talking with those on the ground he jumped his paratroops and turned north to reconnoiter over Tafaraoui and La Senia. It must be remembered that to the best of his knowledge the mission was operating on the "peace" plan. There were evidences of a ground battle occurring at Tafaraoui, and at La Senia he was met by antiaircraft fire. With his fuel low and one engine spitting and missing, he sat down on a dry sebkra and managed to establish radio contact with the ground commander, reporting the situation of the aircraft and paratroops at the west end of the Sebkra d'Oran. Here he was joined by another C–47.

Presently, with the arrival of French civilian police, Colonel Bentley and the crews of the two planes were taken prisoner. On the way to Oran they were joined by the crew and parachutists of the third C–47 which had landed in the vicinity early in the morning, apparently the first to land in Algeria. Incarcerated in the prison camp of St. Philippe, Colonel Bentley was courteously treated, and remained there until the 11th, when American armored forces captured the camp.

Transports Move to Tafaraoui

Meanwhile, Colonel Schofield had established a command post on the second floor of the airdrome headquarters building and made liaison with the armored division. This was the unit which had helped to take Tafaraoui and which engaged the enemy in the hills in an attempt to clean up the artillery which had been sporadically dropping shells on the airdrome all afternoon.

Not all the aircraft which took off from the west end of the Sebkra d'Oran reached Tafaraoui. One was forced down at the east end by French fighters, and in the process most of the crew were wounded (one dying the next day); three paratroopers were killed and 10 wounded. Near the same place another plane was washed out in landing to escape enemy action, and a third one, also forced down, had its co-pilot killed. The parachutists went on to join in the attack on Tafaraoui.

Earlier in the morning a C–47 was forced down in the same region by a French fighter, and the crew and parachutists barely had time to spring to the ground before the Frenchman riddled the plane, wounding one man. Later, other C–47's landed near-by and took off the crew, the parachutists, and the salvage. Another troop carrier aircraft, coming down near Arzew, did not join the group for some days.

Of the 39 planes belonging to the 60th Troop Carrier Group which left England, one was at Gibraltar, two at Casablanca, three in Spanish Morocco, and the others near Oran; of these, at least three had been damaged beyond repair. Only 14 of the aircraft at Tafaraoui were at the moment flyable.

Twenty-six Spitfires of the 31st Fighter Group, flying via Gibraltar, arrived at Tafaraoui during the afternoon of D-day. It had been arranged that four Hurricanes from a carrier would cover the landing, and four French Dewoitines above the field were mistaken for the Hurricanes. The attacking Dewoitines brought down one Spitfire just off the end of the airdrome while in the traffic pattern, but other Spits shot down all four Frenchmen. In the dogfight it was very difficult to distinguish the planes of one nationality from those of another. One French pilot bailed out when his plane burst into flames, and another fighter which broke away crashed about 10 miles from Tafaraoui. This action occurred about 1600. At 1845 four Spitfires strafed La Senia airfield in cooperation with the armored force then attacking.

On Monday, 9 November, the Americans at Tafaraoui were awakened by shell explosions and antiaircraft fire, which continued at intervals during the day. One C–47, its radio operator wounded, was put out of commission. While no C–47's took off during the day, the Spitfires were busy. Armored units devoted their attention to the gun positions on the surrounding hills, and by midafternoon the conflict had waned; thereafter sniping was the only hostile action. During the afternoon General Doolittle arrived in a B–17 escorted by 12 fighters.

The morning's principal air action was the breaking up of a column of the Foreign Legion en route from Sidi-Bel-Abbes. Three formations of four Spitfires each took off periodically during the morning to strafe this 10-mile column. The French had very little AAA and the Spits were able to strafe almost at will. A few of the large French guns arrived within range of the airdrome, but their fire was inaccurate and the Spitfires destroyed their emplacements. During these actions the Spitfires had to use captured French ammunition because their own supplies had not arrived.

By noon of 10 November the French Air Force had been destroyed or captured. The U. S. loss was six Spitfires and three C–47's.

Period After the Fall of Oran

Air movements began even before the fall of Oran, when on the 10th two C–47's were dispatched to Blida and Maison Blanche to ferry military personnel, returning the same day. The next day 13 planes carried 134 paratroops to Maison Blanche. During the succeeding days and weeks Spitfires flew reconnaissance patrols while the air forces were built up.

No time was lost in organizing the Twelfth Air Force for the expected encounter with the Luftwaffe, for the struggle in Tunisia was entering a hazardous stage and air reinforcements were badly needed. Incoming ground echelons and new units were sent east as soon as practicable. French airdromes were repaired and new ones hastily laid out in wheat fields and sheep pastures. Supplies at first were a problem, but air service, quartermaster, and ordnance organizations moved in rapidly, and within a week the supply situation was well in hand, though eventually the numbers of incoming troops were so great that thousands of them had to live in puptents in the rain and mud.

The Algiers Landings

The Eastern Naval Task Force consisted of 48 naval vessels, including two aircraft carriers and 34 transports and cargo ships. Nearly all the fleet, except five American cargo ships and transports, was British. The Eastern Task Force to be landed at Algiers was also mainly British, although the small proportion of American troops, two regimental combat teams, and the U. S. commander, General Ryder, were supposed to give it an American complexion, thus making it less repugnant to the French. The missions of the Eastern Task Force were:

1. To seize the ports and airfields of the Algiers area in order to provide a base for the invasion of Tunisia.
2. To extend eastward by capturing ports and airfields which would be useful in the push on Tunisia.
3. To extend westward to meet the forces approaching from Oran.

Though the city of Algiers was well protected by coastal batteries, it was planned to gain control by making landings about 25 miles on each side. The broad, open Bay of Algiers faces the north. On each side are wide, rugged capes, Point Pescade on the west and Cape Matifou on the east. A landing at Sidi Ferruch could skirt the hill country below Point Pescade and take Algiers in the rear; similarly, landings east of Cape Matifou could open a passage to the Bay of Algiers and approach the city on the southeast.

The Algiers landings were less seriously opposed than those in Morocco and Oran. The batteries of Fort d'Estrées and Cape Matifou offered the greatest resistance and had to be bombarded by naval vessels and aircraft. One U. S. troopship was torpedoed at sea but not sunk on the morning of the 7th, and though 800 of her combat troops put off to cover the 160 miles to Algiers, all of the landing craft had to be abandoned and the soldiers crammed into a British destroyer. On 9 November they landed at Algiers.

The ships assigned to Cape Matifou area began unloading at midnight 7–8 November and continued the process all day. At 1730 a group of Heinkel bombers and Ju–88 torpedo planes attacked. The USS *Leedstown* was torpedoed. Next afternoon another flight of German planes finished the *Leedstown*.

Although operations were hampered by rough weather and a majority of the landing craft were lost, landings were made in both projected areas. Sidi Ferruch airfield was occupied by American troops at 0300 and the Maison Blanche field fell at 0830 after an engagement with French light tanks. Blida airfield was occupied about noon. Meanwhile the troops had closed in on Algiers, but negotiations with Admiral Darlan, which had begun a few hours after the landings, resulted in the surrender of the city at 1900. All of eastern Algeria was included in the surrender.

Shortly after the fall of Maison Blanche airfield, 19 Hurricanes and 35 Spitfires arrived from Gibraltar as advanced units of RAF Eastern Command. Operations were conducted on the 8th and 9th from a British carrier, though on the first day there was very little air activity because of the shortage of fuel. However, Servicing Commandos and RAF Regiment personnel began work at once on both the airdromes. On the 9th German bombers attacking Algiers were met by RAF fighters and at least 12 were shot down.

So ended the preliminary stages of the battle for Northwest Africa, a conflict that put an end to the fluctuating tides of victory and finished by flinging the enemy back across Mare Nostrum after the first serious setback at the hands of the Western Allies.

PART II

The Twelfth Air Force in the Tunisian Campaign

BEFORE the Northwest African invasion was fully decided upon, powerful arguments had been advanced for the inclusion of Tunisia in the initial landings. The planners, however, had had to consider four factors:

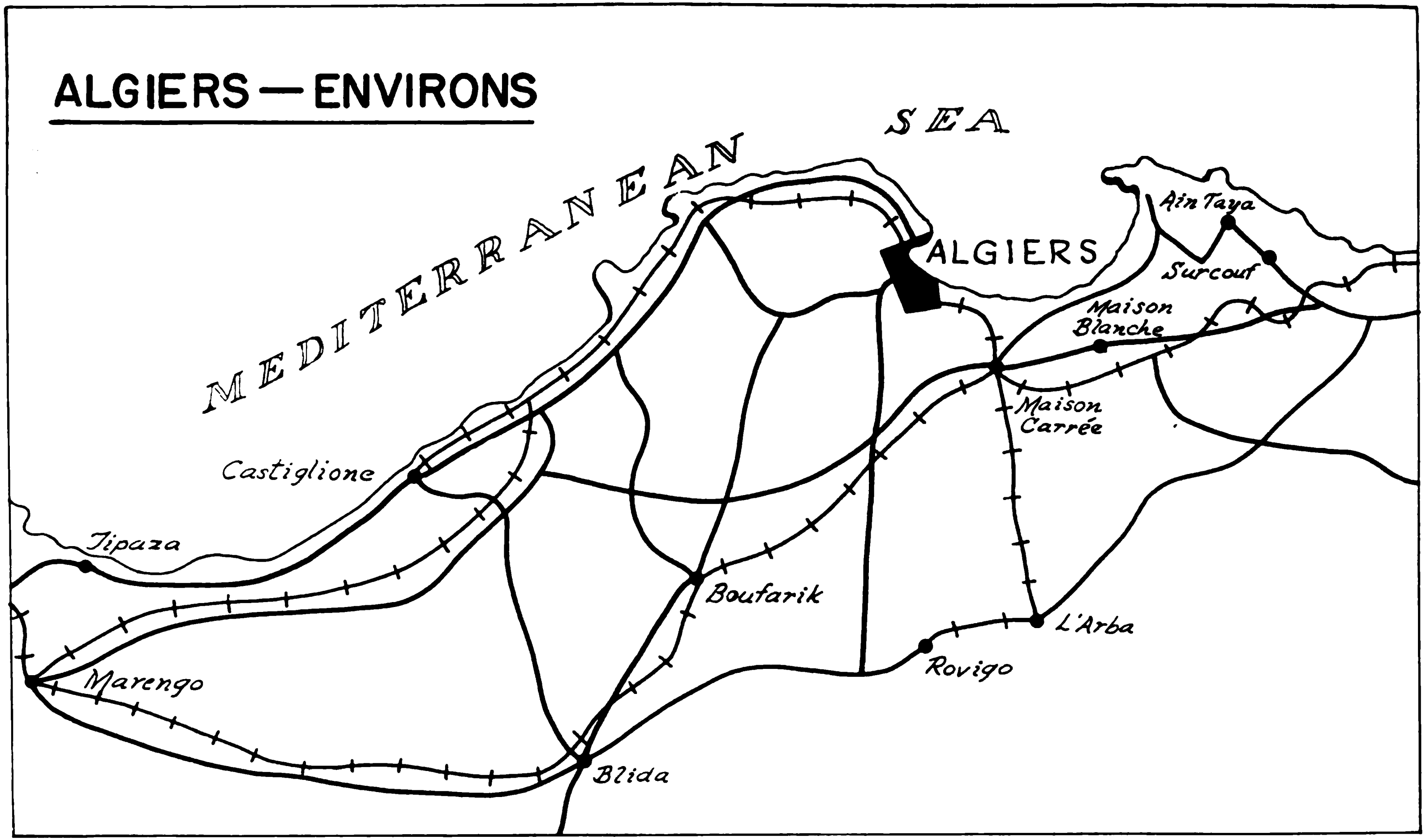
1. The small number of Allied troops available, which would be spread even thinner if Tunisia were included.
2. The necessity of maintaining a large holding force in Morocco lest the Axis strike through Spanish Morocco.
3. The possible hostility of the French military and naval establishments in Morocco.
4. The overwhelming air superiority of the Axis over the straits between the Tunisian coast and Sardinia and Sicily, which might make disastrous any Allied landing attempt.

In the end it had been decided that it would be wiser to insure the firm control of Morocco and Algiers, a decision in which the enemy threat to Morocco had been the deciding factor. But it was planned that as soon as control of Algiers was gained light mobile elements would be pushed toward Tunis and Bizerte as rapidly as possible.

For a long time it will be debated whether the more audacious course would have been the wiser. Admiral Cunningham spoke for himself and an appreciable number of others when he said, "It is a matter of lasting regret to me that the bolder conception for initial assault in that area (Tunisia) was not implemented. Had we been prepared to throw even a small force into the eastward parts, the Axis would have been forestalled in their first token occupation and success would have been complete. They were surprised and off their balance. We failed to give the final push which tipped the scales."

The task of getting control of Tunisia was complicated by many difficulties:

1. *Terrain.*—The country between Algiers and Tunis was extremely rugged, with high mountains and narrow valleys which were prohibitive to armored action.
2. *Transportation.*—The roads were few, and few of these were hard-surfaced. Three railroads led from Constantine into Tunisia, but one of these was broken by a 20-mile gap through mountainous terrain which had to be negotiated by motor vehicles. Moreover, all the railways were in disrepair and rolling stock was scarce and unreliable. The Allies did not possess, nor could they obtain at once, the motor transport necessary to rush even the few available combat units and their necessary supplies to the region of prospective action near Tunis and Bizerte.
3. *Air cooperation.*—There were no hard-surfaced airfields in the intermediate area; moreover, most of the available fighters were short-range and quite unable to cover effectively the advance spearheads as they approached Tunis and Bizerte.
4. *Weather.*—Northern Tunisia is a region of heavy winter rains, which usually begin in late November and continue through February. If the advance failed to seize Tunis and Bizerte before the rains began, it was inevitable that roads and air-



ALGIERS — ENVIRONS

fields would be reduced to quagmires, and transportation and air cover would be greatly hampered if not actually interdicted.

Nevertheless an all-out effort was made to improve such opportunities as existed and to reach the objective before the rains began. The plan adopted was threefold:

1. Naval units and landing forces were to be sent eastward to capture the ports and airfields in the vicinities of Bougie, Djidjelli, Philippeville, Bone, and La Calle.
2. Paratroops were to drop on the airfields at Bone, Souk-el-Arba, and Youks-les-Bains.
3. Infantry and armored units were to be rushed by road and rail to points as far within Tunisia as possible. For this effort there were initially available the equivalent of one infantry division and one tank regiment, both under strength.

Because the French in Tunis did not oppose the enemy landings, which began the day after the Allied invasions, by 18 November 1942 the Germans were moving out of Tunis to establish a front against the advancing British. Every passing day saw new Axis aviation units established on the airdromes and new ground forces landing from ships, transport aircraft, and gliders, and spreading across the western hills. In November alone it was said that more than 1,200 Ju–52 landings were made at Bizerte. By the end of November, the moment of crisis, Axis troops of all categories numbered about 20,000 well-equipped men. Not only did the enemy have the advantage of being within 100 miles of his Sicilian bases, across a strip of water which he rigidly controlled, but the airdromes in eastern Tunisia were suitable for all-weather use, an incalculable advantage during the ensuing rainy season.

Operating from Algiers, the British seized control of all the ports and airfields along the coast as far as La Calle, landing troops from the sea under cover of naval guns and the Fleet Air Arm, and bringing in fighter squadrons at the earliest possible moment. These movements were accomplished under difficulties, as Axis planes, probably based on Sardinia, attacked at all times of the day and night. One of the first assaults was upon Bougie, where three U. S. combat loaders were sunk; a British carrier was slightly damaged, but its aircraft brought down 11 enemy planes for the loss of three.

Paratroop Activities

Paratroop drops played an important role in the eastward advance. The U. S. 64th Troop Carrier Group, which had flown from the United Kingdom via Gilbraltar with British paratroops, landed 34 planes at Maison Blanche on 11 November 1942. Immediately upon landing, the aircraft were refueled and the troops reorganized, in view of plans for early action. At 0600 on 12 November, 26 C–47's took off loaded with paratroops for the invasion of Bone. The operation was completely successful, and all planes returned at 1030. The escort of 12 British fighters brought down one Ju–88.

However, Axis bombardment of Bone was so heavy that it became necessary to abandon the place or dispatch antiaircraft guns. At 1200 on the 13th five C–47's, escorted by P–38's, were sent with guns and ammunition to tide the garrison over until more could arrive by water. At 1500 five more C–47's departed for Bone, loaded with gasoline for fighting planes and escorted by five P–38's. The arrival was after dark; the transports landed and turned their lights on the runway to enable the Lightnings to land. It is believed that these two flights were a decisive factor in holding the port. A flight of three C–47's took additional gasoline the next day.

On 15 November a mission left to drop a parachute invasion of Souk-el-Arba, but weather forced the mission to return. The next day 32 C–47's, escorted by 12 P–38's, successfully completed the mission without loss.

Youks-les-Bains was taken on 15 November 1942. On this mission 20 aircraft of the 60th Troop Carrier Group departed from Maison Blanche at 0730 and dropped 350 paratroops of the 2d Battalion, 503d Parachute Infantry, at Youks at 0945 from an altitude of 400 feet or less in record time. The flight went by way of Djidjelli, being escorted to that point by six fighters and from there to Youks and back to Maison Blanche by 12 fighters. The drop was made without either air or ground opposition. A medium force of German infantry was reported within 20 miles of Youks. The mission of the parachutists was to deny to the Germans the use of the zone over which they were dropped. Despite the unfavorable route weather, which caused the flight as well as the escort to resort to instrument flying, the formation reached the drop zone successfully. Two enemy planes were sighted over the drop zone but they failed to attack. "The Youks jump," said Colonel Raff, "was the most successful jump I've ever made. The landing pattern over the target was perfect and well timed."

On 29 November 1942 a large-scale attack was made on three vital airdromes at Depienne, Pont-du-Fahs, and Oudena, all lying in a triangle about 15 miles southwest of Tunis. Of the 45 transports used, 26 were furnished by the 62d Troop Carrier Group and 18 by the 64th. The planes carried about 530 British paratroops. The last transport took off at 1230, followed by four Hurricanes and eight P-38's; at Le Kef 14 Spitfires joined the defense. The transports moved at about 130 m. p. h. and in spite of a rather stiff wind and a ragged formation they arrived at each scheduled point at the exact time planned. Upon arrival at the target the planes dumped their loads. All parachutists bailed out except two, who failed because of static cable trouble, but both soldiers asked the pilot to fly over the drop zone again so they could jump. All ships returned safely. Although they had penetrated into very hot enemy territory, they had met no opposition.

Allied Air Activity, November and December

All airdromes along the Tunisian border were quickly taken over and strengthened to provide bases for air cover over the advancing First Army. By this time the autumn rains had set in, and airfields were so muddy that aircraft, particularly bombers, were often immobilized. Mats and tracks were laid as rapidly as they could be procured, but transportation, both rail and motor, was so strained in carrying necessary supplies, ordnance, and personnel that the process was very slow. In this emergency troop carriers were used to haul freight and personnel, with or without escort, almost to the front lines, and they continued flying under conditions that ordinarily would have been considered prohibitive. Communications facilities were also very inadequate during those early days.

November and December were feverish months for the U. S. and British air forces. Patrols were flown over Allied-controlled Mediterranean ports, and there were frequent clashes with the enemy. At least 32 Axis raiders were shot down by night fighters alone. Tactical

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reconnaissance, fighter sweeps, and air cooperation with ground troops were daily tasks when weather permitted. Furnishing escort for C–47's carrying precious supplies was a constant problem. During the period, 170 enemy aircraft were reported brought down by RAF day and night fighters, with 41 probably destroyed. The USAAF as a whole, fighters and bombers, accounted for 109 enemy aircraft destroyed and 26 probables, at a cost of 70.

Bombers of all classes lost no opportunity to harass the enemy. The only RAF bombers to arrive before the end of December were four squadrons of Bisleys, and from 14 November they made regular attacks on the airdromes and docks of Tunis and Bizerte; operations were at first from Blida and then from Canrobert and Souk-el-Arba. Bisleys flew a total of 442 sorties during November and December and dropped almost 157 British tons of bombs. Fourteen Bisleys were missing from operational and 13 from other causes. During the same time Malta-based aircraft dropped 644 British tons of bombs on Tunisian targets. Even by the end of December the Twelfth Air Force had only two groups of Flying Fortresses, three medium bomber groups, and a few A–20's in the forward area. However, from the middle of November they were busily bombing Tunisian objectives whenever weather allowed; 78 missions were flown by Twelfth Air Force bombers and 1,300 long tons of bombs were dropped.

On the night of 20 November about 30 Axis planes, presumably from Sardinia, came in shortly after dark and bombed the airfield at Maison Blanche for two hours. One B–17, two P–38's, six Beaufighters, and four photo reconnaissance Spitfires were reported destroyed and other planes were damaged. The enemy dropped demolition bombs, delayed-action bombs, booby traps in the form of common objects such as purses and fountain pens, and caltrop-like objects intended to puncture tires. Defense from the field was almost nil, but two enemy planes were reported shot down at sea by naval craft. On the night of the 21st a similar attack on the same objective was stated to have damaged 16 aircraft.

Our heavy loss was attributed to the lack of radio control and to the fact that night fighters had no A. I. equipment. By 25 November these lacks had been remedied, with the result that during the next few days more than one-third of the enemy aircraft entering the Algiers area were destroyed. Originally, Axis bombers made straight high-

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level approaches in small formations at five-minute intervals. This plan proving vulnerable, simple evasion tactics were employed, and attacks were made at irregular intervals, at lower altitudes, and from unexpected directions. These also proved easy to counteract, and presumably the drop in enemy pilot morale forced the Germans to adopt more complicated tactics.

The Allied ground movement eastward was undertaken by understrength armor and infantry with even less adequate motor transportation. Nevertheless, by the 15th Tabarka had been occupied and by the 18th the British paratroops who had been dropped in Souk-el-Arba had come into contact with the Germans. About the same time, U. S. paratroops dropped at Youks-les-Bains, occupied Gafsa airfield, and came up against Italian patrols. By this time the Tunisian French forces under General Barré had come over to the United Nations' cause, and they aided in forming a screen between the Germans and the gathering British and American troops.

During the last days of the month a gallant Allied advance was made on Mateur, Tebourba, and Medjez-el-Bab. On the 28th Djedeida was reached, only 12 miles from Tunis, but there the surge was stopped. The rains had set in and mud had bogged down armor and supply trains, but of equal importance was the fact that the ground forces had emerged beyond effective range of their fighter cover. The forward fields were too exposed to enemy action to be occupied as bases. Six Spitfires which attempted to land at Medjez-el-Bab were attacked by enemy planes; two Spitfires were shot down and the rest flew back to Souk-el-Arba. Even the rear airfields were often unserviceable from the heavy rains, and German bombings aggravated the supply problem. From these rear area fields Spitfires could fly over the lines only five or ten minutes, and the few P–38's at hand were insufficient to furnish continuous patrols. The result was that German aircraft simply fled when Allied fighters appeared, then returned in half an hour to complete their work. So close were the Ju–87's to the front, and so efficient was German air-ground liaison, that air cooperation was furnished within five or ten minutes of receipt of the request.

Tunis and Bizerte were still in Axis hands and were to remain there until the next May. The effort had not, however, been entirely fruitless. Allied forces were established in the line of mountains facing the northern Tunisian plain, and could issue forth in the spring to finish their task. The French had come over to the Allied side and, though under-armed and under-supplied, were grimly holding a segment of the line. Also, we held a line of advanced airfields, which, though often useless because of mud, would afford good bases with the cessation of the rains and with the acquisition of long-range fighters. Meanwhile the Allies devoted themselves diligently to the task of overcoming transportation difficulties and building up troops and supplies for the coming conflict.

The Tunisian Winter Campaign

From the time of the tragic and expensive withdrawal from Djedeida, "General Mud" continued to operate against us, while the Axis went on building up strength. While the Luftwaffe in Tunisia was probably no stronger than our own forces, its bombers could operate from the comparative safety of Sardinia and Sicily and its fighters were favored with all-weather fields and a short supply line.

The First Army's race to Tunis had been lost in large part because of the unseasonable rains which turned the fields into morasses, and because there were not enough long-range fighters to cover the advance when flying from Allied fields on the Algerian-Tunisian border. The winter that followed was one of the worst on record; it was said, quite understandably, that this was the first major military campaign undertaken there at this time of year since the Punic Wars. The season had gone well into March before any extensive general ground movement could be undertaken in the north, though the Eighth Army, advancing over the sands of Tripolitania, was able to drive Rommel before it and across the Tunisian border. During this time the supply and airfield situation remained discouraging in Tunisia, although there were many improvements on the fields in Algeria and Morocco.

On 11 December 1942 the area eastward from the Algerian-Tunisian border was assigned to the advanced echelon of the XII Fighter Command with headquarters at Tebessa. From Bougie to the border of Tunisia was the territory of XII Bomber Command. West of it to Cape Tenes was the Central Algerian Composite Wing, which never really operated; from Cape Tenes to Oujda and the border of Spanish Morocco was the Western Algerian Composite Wing under the rear echelon of XII Fighter Command; the Moroccan Composite Wing operated in Morocco. All wings were activated 26 January 1943.

XII Fighter Command's advanced echelon moved back to La Senia 12 January 1943, and presently took over control of the 1st, 2d, and 3d Air Defense Wings. The 2d covered Morocco; the 1st covered the Oran sector, extending from the border of Spanish Morocco to Cape Tenes; and the 3d covered the Algiers region, extending from Cape Tenes to Bougie. XII Bomber Command retained the territory from Bougie eastward.

In order to facilitate XII Fighter Command's work, certain signal air warning battalions and fighter control squadrons were assigned to it. The mission of XII Fighter Command was to provide:

1. Area air raid warning.
2. Fighter escort for seaborne and airborne craft.
3. Patrols and sweeps.
4. Harbor protection.
5. Homing of lost planes.
6. Air-sea rescue.

On 15 February 1943 the Fighter Command and the defense wings were taken into the Coastal Air Force. In August the 1st, 2d, and 3d Air Defense Wings became respectively the 62d, 63d, and 64th Fighter Wings, and the last-named was transferred to XII Air Support Command.

The RAF General Reconaissance Wing, organized chiefly to protect shipping, began operations from Tafaraoui on 11 November and later moved to Blida. During November and December 572 sorties were flown, of which 280 were sea sweeps and 261 convoy escorts. Twenty-seven submarines were attacked. The work of this coastal command, though often unspectacular and even dreary, was of primary importance in bringing convoys safely into port and enabling supply organizations to rush essential materials to the front. In February the assignment was taken over by the newly organized Coastal Air Force.

The Allied Air Force was activated 5 January 1943 and included all USAAF, FAF, and RAF units in Northwest Africa. General Spaatz was designated commander. The Allied Air Support Command was established under the AAF on 22 January, composed of XII Air

Support Command, RAF 242 Group, Photo Reconnaissance, and other units as assigned. Six weeks after its formation the Allied Air Force, as a result of the Casablanca Conference, was inactivated and replaced by the Northwest African Air Forces.

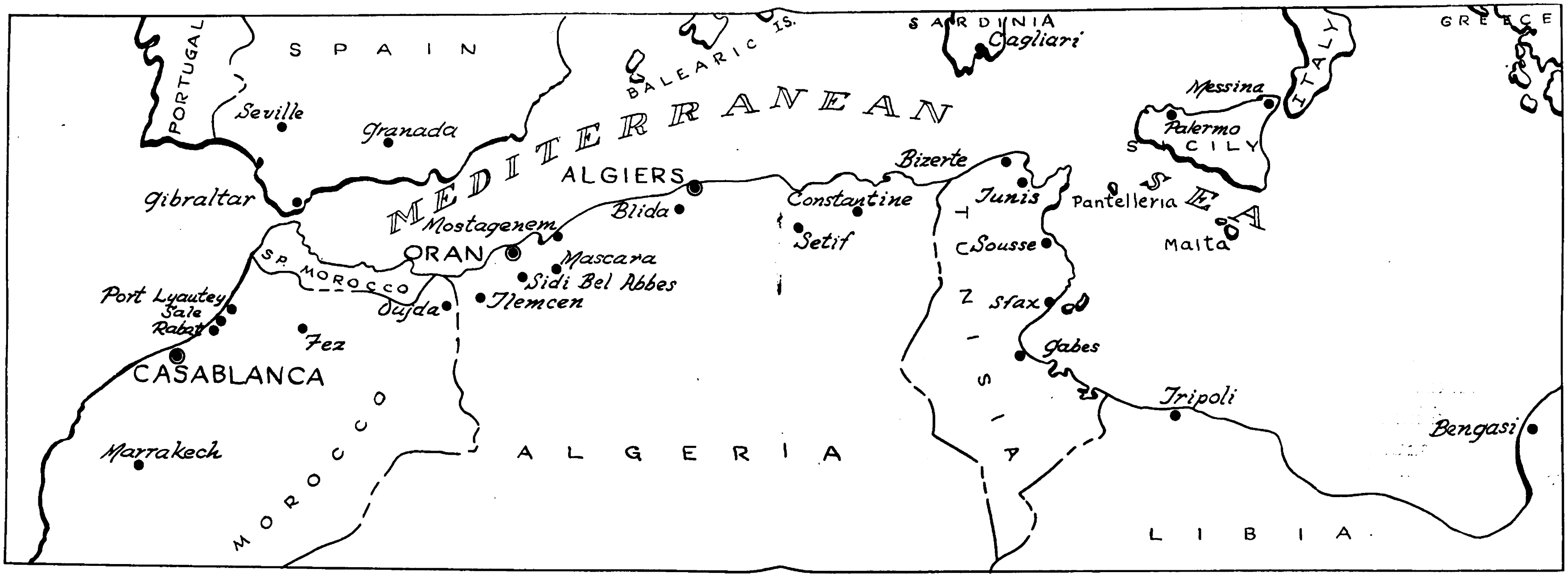
New combat units, both RAF and USAAF, continued to arrive and were fanned out as close to the front as was operationally possible. The day fighter elements of Eastern Air Command were organized in 242 Group, and this was brought up to Souk-el-Arba, as air cooperation with the First Army in northern Tunisia. As the danger from Spain decreased and the Tunisian emergency became more apparent, U. S. II Corps in southern Tunisia received additional air cooperation. XII Fighter Command and some of its elements were withdrawn for coastal work farther east, and XII Air Support Command was brought up and based mainly at Youks-les-Bains and Thelepte airfields. Meanwhile the B-17's were grouped near Biskra and the medium bombers near Constantine.

Twelfth Air Force Status Report as of 2 January 1943 placed the figures for that organization at 755 aircraft assigned and 520 operational. On the 5th, the *RAF Middle East Review* gave 251 as the number of aircraft of the RAF in this theater. One must also take into account, in estimating Allied air strength, the squadrons in Malta and the Western Desert and Ninth Air Forces.

Allied ground forces consisted of the British First Army north of Pont du Fahs, and of four French divisions and the U. S. II Corps south of that point.

Notwithstanding Allied bombing efforts, which got well under way in December, von Arnim, the German commander in Tunisia, succeeded in amassing respectable forces and supplies. On 1 January it was estimated that he commanded 30,000 Germans and about 15,000 Italians, together with 140 serviceable German tanks and 60 Italian. His bomber strength was based mostly in Sardinia, Sicily, and southern Italy, and his fighters principally in Tunisia. It was estimated that there were about 610 aircraft, 225 of them Ju-88 bombers, and 150 Me-109 and FW-190 fighters; 55 to 60 percent were supposed serviceable. There were approximately 560 Italian aircraft, 50 percent of them fighters, of which half were thought serviceable.

Von Arnim's Germans were chiefly in the north opposite the First



Army, while Italians held the center and south. A little later, however, Rommel reinforced the south with his 21st Armored Division plus Italian infantry.

The Strategic Situation

The Axis held the Tunisian coastal plain, while the Allies occupied the fringe of mountains to the west. To secure his position von Arnim needed:

1. To entrench himself against British pressure in the rough country around Mateur.
2. To take Medjez-el-Bab, the key to the great valley which led to Tunis.
3. To capture the range between Pont-du-Fahs and Pichon, then held by the French, which threatened the plain at its narrowest point opposite Enfidaville and Sousse.
4. To drive the Americans from Sbeitla and Gafsa, where we stood poised for a drive on the Gabes-Sfax-Sousse road so vital to the communications of Rommel, who was retreating northwestward from Tripolitania.

The last two weeks of 1942 saw a lull in ground activity while both sides strove to build up the level of their supplies. Flying weather was bad and airfields were bogged down by rains, yet our bombers sought to hamper enemy communications by strikes on ports and depots.

From 1 December repeated bombing attacks had been made on El Aouina airdrome by B–17's, A–20's, and Bisleys. On the 1st, six A–20's and 13 B–17's were followed at dawn by six Bisleys and nine more A–20's. The hangars were damaged and about 30 out of 60 parked aircraft were destroyed. Later that day 15 more parked aircraft were destroyed by 12 B–26's. December also saw attacks on Sidi Ahmed airdrome at Bizerte by B–17's, Bisleys, and P–38's. In addition, there were attacks on Mateur, and on Sidi Tabet, west of El Aouina.

Fifteen Fortresses began the day attacks on the port of Tunis on 6 December. Other raids occurred on the 13th, 14th, and 15th, respectively, by 17 B–17's, 15 B–17's, and 17 B–24's from the Ninth Air

Force. On the night of 15 December, 27 Malta-based Wellingtons set at least 20 fires which were burning briskly the next day when more bombers came over. Tunis remained a favorite target throughout December, by day and night.

The port of Bizerte also received attention. Fortresses and Marauders of the Twelfth and Liberators of the Ninth took turns by day, and toward the end of December the new Wellingtons of the Eastern Air Command flew over at night in their maiden operation. There were many hits on docks, warehouses, and ships, and many fires were started.

Northwest African aircraft cooperated with Western Desert, Ninth, and Malta-based in bombing Sousse and Sfax, Rommel's supply warehouses. On the 19th, 11 U. S. mediums bombed the Sousse marshalling yards and hit the station and a freight train. The same evening light bombers struck the Sfax marshalling yard. On the 27th Sousse was attacked in turn by aircraft from Algeria, Egypt, Malta, and Egypt again. Fighter-bombers and bombers struck heavily at enemy transport at Massicault, and on the roads around Tunis and Kairouan, and destroyed upwards of 100 vehicles.

Tactical Air Attacks in Early January 1943

It was apparent that von Arnim had scheduled one or more moves for the near future, and Allied fighters and light and medium bombers ranged the length of the front, searching for targets whenever weather permitted. Enemy convoys in the north were small or well concealed; hence not much damage was done to these, though keeping a sharp lookout resulted in some bombing and strafing. Efforts in the south were better rewarded. Tank parks and camps were attacked near Gabes, where the enemy was building up his forces.

The Twelfth Air Force mediums and heavies attacked the marshalling yard at Kairouan with some success on 4 and 6 January. Two railway bridges were destroyed near Graiba, the marshalling yard at Gafsa was attacked, and other bridges were bombed north of Gabes and at La Hencha. While annoying, such operations probably did not seriously hamper enemy preparations.

Von Arnim's January push in central Tunisia, treated in greater detail later, necessitated an intensification of bomber effort against his ports of entry at Tunis and Bizerte. The new Wellingtons of Eastern Air Command made this possible. Their principal target was Bizerte, which they bombed on 16 nights in about 150 sorties; weather allowing, they doubtless would have attacked oftener. They dropped bombs ranging in size from 250- to 4,000-pounders in addition to liberal unloadings of incendiaries. On several nights the fires they set were visible for 40 miles. B–17's also flew 100 effective sorties over Bizerte and Ferryville and pounded the ships in the harbors. These missions were notable for the numbers of enemy fighters brought down by the B–17's and their escorting P–38's. At times as many as 50 fighters rose to oppose the January assaults and, though they lost heavily, they took a toll in bombers which we could ill afford.

The Fortresses made three more attacks on Tunis and the B–26's made one. Several attempted raids on this port were abortive because of weather. Attention was also given to the industrial section of Tunis and to the marshalling yards, power plant, and near-by camps. On 2 January the B–17's and escort claimed 17 enemy fighters destroyed, with 10 probables.

Sousse and Sfax each sustained three attacks. The latter was visited by a total of 64 B–17's, 18 B–25's, and 15 B–26's, all escorted. The heaviest concentration was on the 28th, when six enemy fighters were shot down for a loss of one B–26 and one P–38.

The favors extended by the Ninth and Western Desert Air Forces were returned when Northwest African heavies and mediums bombed Castel Benito airfield, south of Tripoli, on 9, 12, and 18 January. Twenty-five escorted B–17's and five B–26's took part in these missions, in which numerous fires were set among buildings and at least 20 parked aircraft were destroyed. Twenty enemy fighters were claimed shot down; one Fortress and one Lightning were lost.

Even before the fall of Tripoli on 23 January, Liberators of the Ninth Air Force supported by RAF elements began to soften up Tunisia both in preparation for invasion and to harass German supply lines to Tripoli which now ran through Tunisian ports. Tunis, Bizerte, Sousse, Sfax, and Gabes all suffered heavily during January. To the efforts of the Ninth were added those of the Twelfth, and the British Navy and RAF united in attacking ships at sea. It was calculated that because of Northwest African and Middle East bombings the month of January saw a great reduction in enemy supplies landed; *RAF Middle East Review* (No. 2, p. 13) estimates deliveries as follows:

Port	*Normal daily discharge (Tons)*	*January average daily discharge (Tons)*
Tunis	2,400	700
Bizerte	1,800	1,000
Sousse	1,500	300
Sfax	1,500	200
Gables	300	–

In addition to these activities, Ninth Air Force heavy bombers struck at Naples and Palermo.

NAAF Bombing of Tunisia in February and March 1943

On 3 February 15 B–26's with P–38 escort attacked the main airfield at Gabes, but dust prevented observation of results. Enemy fighters offered stiff resistance, but lost at least three and probably more aircraft in a 40-minute fight. On the 4th, 18 B–17's escorted by P–38's again attacked and set half a dozen fires; at least nine Axis fighters were downed. The same day, 24 B–17's bombed another Gabes airfield, and 16 enemy fighters were claimed destroyed by bombers and escort. One Fortress and four P–38's failed to return. Other attacks followed on the 8th by 33 mediums which hit the target area heavily.

Highly effective missions against El Aouina were flown by Marauders on 13 and 14 February. Hits were scored among the buildings and parked aircraft, and bombers and escort shot down at least nine Me–109's and probably four more. Other attacks were made on 3 and 10 March by B–17's and similar successes were registered; transport Ju–52's at La Marsa were also bombed on the 10th. At least six Axis fighters were destroyed in these engagements. Strikes were also delivered against Sfax-el-Maouh on 2 February and by Fortresses and mediums against Kairouan airfield on the 9th, 15th, and 24th. A B–25 was lost against a bag of seven enemy fighters.

The bombing of Gabes and northern Tunisian airfields continued in March, but priority was now given to ports. The Wellingtons devoted themselves primarily to Bizerte, and on the 25th 32 B–17's

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dropped their load there, hitting the docks and scoring near misses on the ships in the harbor. A B–17 attack on the Tunis docks on the 1st scored many hits, and the bombers and their escort shot down nine fighters while losing one B–17. The next day the attack was repeated with more hits by 36 B–17's on both Tunis and La Goulette. Wellingtons added their bombs on the night of 12–13 March and started many fires on the docks, marshalling yards, and the city buildings of Tunis.

Sousse was visited by 42 B–17's on 8 February and suffered considerable damage to buildings, jetties, and ships. On 12 March 38 B–17's set fires in the dock area and scored hits on the marshalling yards and near the powerhouse and loading piers.

During December 1942, attacks on Naples by Ninth Air Force and RAF B–24's had been frequent. January saw but one such mission because of adverse weather. On the 11th Naples was bombed by eight USAAF B–24's which dropped 40 1,000-pound bombs; clouds obscured the results, but one fire was seen to break out in the town. Two B–24's were lost. Palermo and Messina each suffered 22 effective sorties during January, though these were usually alternative targets to Naples.

In the face of much bad February weather, all possible blows were delivered on Palermo and Messina, the former attacked by RAF night bombers and the latter by USAAF B–24's. During February, the Ninth Air Force renewed its attacks on Naples and in one raid sank two ships. Forty-eight sorties were flown over Naples and 116 tons of bombs were dropped. In March the RAF joined the B–24's in pummeling Naples, and together they caused considerable damage to port installations and shipping. Meanwhile Malta- and Northwest Africa-based bombers were strewing havoc among supply ships out of Naples. The enemy then took to sending ships out of Palermo and other Sicilian ports to make the run to Tunis and Bizerte under cover of night. Malta-based aircraft seriously took up the work of destroying Sicilian communications, particularly those at Messina, and were soon joined by the bombers based in the Middle East.

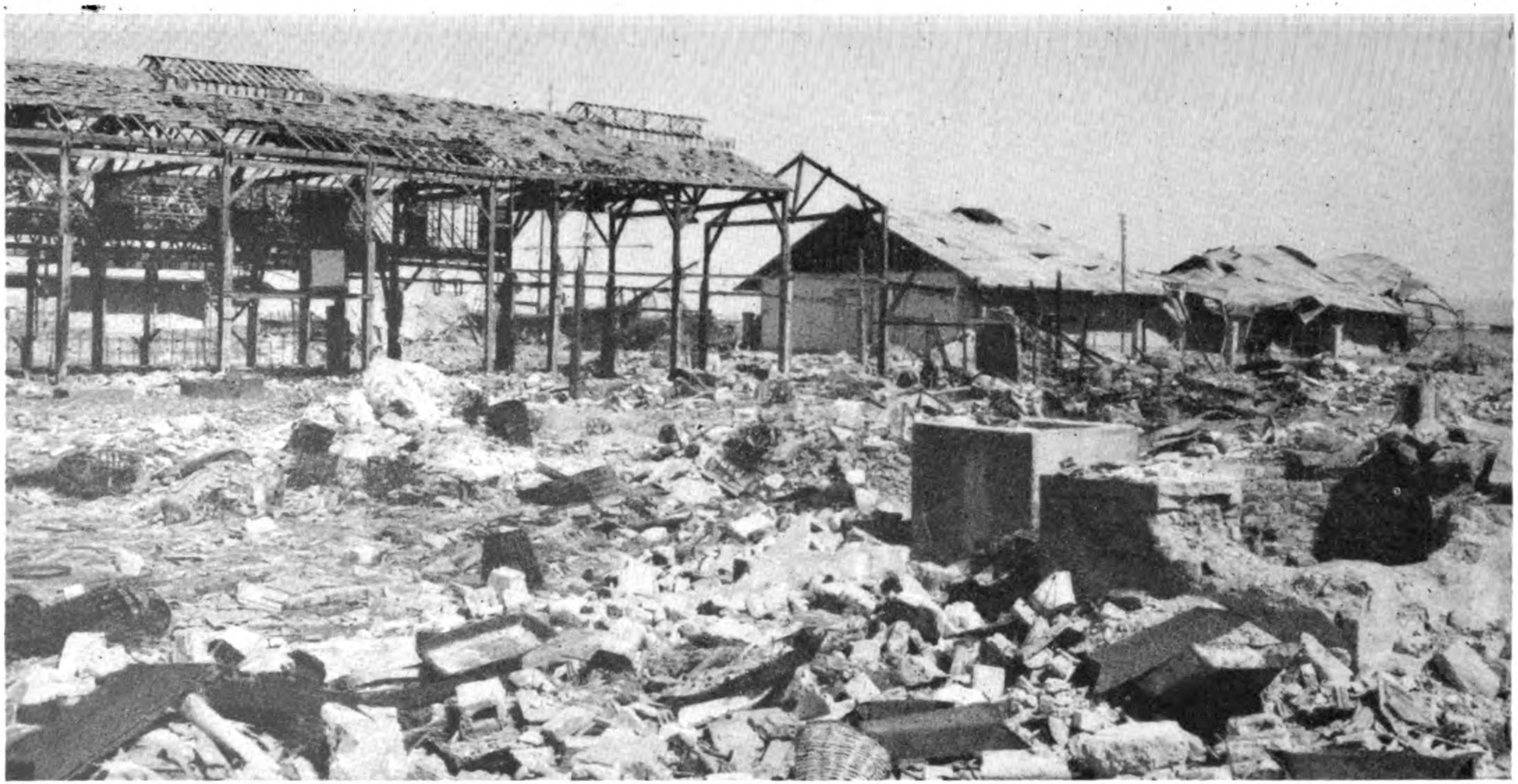
Meanwhile the Northwest African Air Forces was sending its bombers against Sardinian and Sicilian targets. Wellington opened the attack on Elmas airdrome on the night of 1 February, causing fires and explosions. On the 7th, 32 B–17's and 19 B–26's bombed Elmas and the Cagliari seaplane base. High explosive and fragmentation bombs were dropped, fires started, and parked aircraft destroyed. That night 16 Wellingtons briefed for Villacidro bombed that target, Decimomannu, and Elmas; clouds forced their scattering. Nine days of bad weather intervened, but on the 18th heavies and mediums again bombed the same three points. Bad visibility prevented accurate observation of results. Cagliari docks and railways were bombed by 19 B-17's on 26 February, and again on the 28th by 46 B-17's. Docks and anchored ships suffered extensively. Trapani was visited by Wellingtons repeatedly. Palermo also received several bombings, one on 15 February by 19 B-17's and the worst on 1 March by 38 B-17's. Docks, drydocks, and shipbuilding yards were hit by 2,000-pounders, and five vessels were set on fire.

NAAF Shipping Strikes, January-March 1943

During the January-March period numerous shipping strikes were made by NAAF heavies and mediums. On 20 January six B-25's escorted by P-38's struck a tanker between Sicily and Tunisia and saw it explode and settle in the water. On the 22d, six B-26's left a freighter listing; the next day B-26's made an attack on a convoy and saw one ship explode and another capsize, and left one listing. On the 29th direct hits were scored by B-25's on a freighter and another was set on fire.

There were few sightings during the first three weeks of February because of adverse weather conditions, but on the 10th near Cape Bon B-25's sank two Siebel ferries. From 21 February to 19 March successes were frequent. Twenty vessels were sunk, 15 severely damaged, and 11 damaged.

The central sector along the mountain ridge between Pont-du-Fahs and Faid was held by three divisions of French troops, who were poorly armed for fighting even in that mountainous region where tanks could not maneuver. Moreover, there was some disaffection and desertions were frequent. General Giraud was not disposed to leave much to the discretion of Generals Barré and Juin, who commanded in the field. General Eisenhower proposed to give to General Anderson the responsibility of meeting the anticipated Axis thrust, but the French refused to serve under his command. General Eisenhower was therefore forced to assume command, with headquarters



Official Photo USAAF

FORMER SEAPLANE BASE. The seaplane base at La Goulette harbor, Tunisia, while enemy-held, was made unserviceable by accurate Allied aerial bombings.

at Constantine. Meanwhile an organization was set up to supervise rearming of the French, evidently a task requiring many months, and a USAAF fighter squadron's P-40's were given to a group of selected French pilots known as the Lafayette Escadrille.

The first preliminary German move was made on 2 January, when the French were pushed out of Fondouk, west of Kairouan. Air operations in the mountainous terrain were difficult, and smoke signals served only to disclose our ground positions to the enemy.

On 18 January the expected Axis attack began when armor-supported columns moved out of Pont-du-Fahs to seize the coastal range to the south. The French were thrown back along the Oued-el-Kebir, and the attackers streamed through the gap and turned southward into the Ousseltia Valley toward Pichon. British and American units were rushed in from north and south and the drive was stopped within a week by strong counterattacks, but the enemy retained most of the area he had captured. Allied air cooperation had come largely from the RAF airfields around Souk-el-Arba; it had played an important part in blocking the drive.

The Germans were now in control of the northern half of the Ousseltia Valley. Since it was evident that the French did not possess the equipment to withstand a determined Axis push, certain French units were withdrawn to be re-equipped and British and American substitutes were rushed in as rapidly as transportation difficulties could be mastered. Mobile British units were stationed in the south, and none too soon, for on the 30th a German thrust at the weak southern flank of the French captured Faid, and its progress was stopped only by American counterblows and by diversionary attacks out of Gafsa toward Maknassy. These diversions only partly accomplished their mission, and the participating troops were forced to withdraw to Gafsa. In the short space of two weeks the Germans had seriously weakened the Allied center and had insulated their communications between Sousse and Tunis from ground attacks. Moreover, Rommel was now crossing the border from Tripolitania, and a captured dispatch disclosed his intention of striking toward Gafsa and Thelepte. One gain was that in the midst of the crisis the French had at last agreed to serve under General Anderson.

It was during the Ousseltia drive that American fighters began to put ground-to-air communication into use. Faulty equipment and

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inexperience hampered its practical working, but its development in subsequent months made it in Italy the most important factor in the speed and accuracy with which our fighters and fighter-bombers responded to calls for cooperation.

After the fall of Tripoli Rommel retreated hastily to Tunisia and toward the Mareth Line, meanwhile striving to retard his pursuers by bombing their ports of entry, by fighting rear-guard actions, and by mining roads. By 6 February all of Rommel's forces were in Tunisia and he had joined with von Arnim. Rommel now depended to a large extent for supplies upon small coastal craft, and RAF fighter-bombers, in spite of bad weather, found good hunting among them. Meanwhile, however, the ground pursuit was hampered by heavy rains which turned salt flats into bogs, across which causeways had to be built. RAF aircraft took advantage of breaks in the weather to harry the road transport of the retreating enemy.

The weakening of the German rear guard enabled the Eighth Army to occupy Medinine on 20 February, and an armored action which followed forced Rommel to withdraw completely to the Mareth Line the next day. Air activity during the last days was almost nil, due to bad weather. Within a few days, however, the attacks on coastal shipping were renewed with such success that Rommel had to place his chief reliance for supplies upon overland transport from Tunis, a distance of about 300 miles. The delay necessary for the Eighth Army to consolidate for the attack enabled the Desert Fox to divert some of his attention to the American threat to his rear and to dig more deeply along the Mareth Line.

The Mareth Line was really a defensive zone of fortifications in depth which extended for some 60 miles inland from the Gulf of Gabes. The coastal flank was unsuitable for amphibious operations and the right flank extended into rough country. Basically the defenses were remodelings of the old French fortifications, which had been partially destroyed in conformity with the stipulations of the armistice of 1940. Antitank ditches were dug, concrete tank obstacles emplaced, and mine fields sown. It was significant, however, that Rommel did not use the old casements extensively, but preferred to preserve the mobility of his artillery by posting it at points between.

Preliminary Air Actions Near the Mareth Line

The Western Desert Air Force lost no time in attempting to neutralize Rommel's air defense by sending out night bombers against his landing fields and following them with morning attacks by fighter-bombers. Axis fighters put up a stiff resistance but in one day at least seven of them were shot down. In the end the enemy had to abandon several of his airfields and the RAF won air superiority but not complete control.

On the night of 23–24 February air attacks were begun on the Mareth Line itself and upon road transport. Rommel countered on 6 March with an air-covered armored thrust, but was thrown back by Montgomery's artillery and by fighter-bombers which defied the weather as well as the enemy. On the 10th a light blow against Fighting French units was attempted, but it was defeated by fighter-bomber attack. From 11 March USAAF and RAF aircraft subjected the Mareth Line to repeated bombing with considerable success.

There was a lull in the ground battle during the first half of February while both armies piled up supplies and reinforcements for the coming struggle. The RAF remained active with attacks on the Pont-du-Fahs-Enfidaville road and southward. XII Air Support Command gave its attention to the Faid area, attacking with some success Rommel's gathering transport and armor. Bridges and guns north of Maknassy were bombed, but the usual bad weather limited operations.

General Montgomery's pause in Tripolitania to clear Tripoli harbor and to build up his supplies gave Rommel the leisure to put into practice his plan for a thrust toward Thelepte. For this movement he had at his disposal the 21st Armored Division and about half of the 10th. On 14 February he moved his armor in two columns, one out of Faid toward Sbeitla, and one out of Maknassy toward Gafsa. The first, of 80–100 tanks, reached a point within 15 miles of Sbeitla by nightfall despite the opposition of American armored units. At the same time another force of about 30 tanks cut in south of Sbeitla, and in addition small tank units were operating over the area as far south as Sened. That night the Americans withdrew toward Feriana. Next day the Americans thrust toward Sidi-bou-Zid, near Faid, but after a day of

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fighting were pushed back again in spite of furious strafing and bombing cooperation furnished by XII Air Support Command. The infantry had to abandon much of its transport. The 168th Infantry Regiment, completely isolated, was finally forced to surrender. The U. S. armored force had suffered heavily, losing 98 medium tanks, 57 half-tracks, and 29 guns.

On the 17th Rommel's 21st Armored Division occupied Sbeitla and went on to seize Kasserine; at the same time his southern column entered Feriana and Thelepte, forcing the hasty abandonment of the airfields. Strong cooperation by AAF and RAF elements was provided, and they reported some success against enemy tanks, vehicles, and fighters. On the 18th weather prevented bombing missions, but fighters ranged along the German lines, strafing troops and encampments.

Rommel struck on 19 February at the Americans near Kasserine and Sbeitla. The latter point held, but the Kasserine Pass was forced on the 20th and Rommel poised for an attack on the U. S. supply areas between Thala and Tebessa, with a possibility of pushing toward Constantine, Philippeville, and Bone, thus cutting off the Allies' main communication with Tunisia. His movements had been aided on the 19th and 20th by weather conditions which had made it all but impossible for Allied aircraft to operate, and the pilots of the few sorties flown were unable to assess the damage they caused.

On 21 February Rommel debouched from Kasserine Pass and sent a column of 20 tanks north toward Thala and another of 40 tanks toward Tebessa. The first column was met and stopped about 10 miles in front of Thala by the British 6th Armored Division; the other spearhead was halted by the American 1st Armored Division. The battle continued on the 22d; again the Germans failed to break through. That night they began the retreat to Kasserine.

The withdrawal on 14 and 15 February from the Thelepte airfields had jumbled up communications, so that for a few days some of the XII Air Support Command units in the area were almost on their own. The units moved out of Thelepte and occupied airfields at Youks-les-Bains, Tebessa, Le Kouif, and Kalaat Djerda. Although the withdrawal occurred at night, most of the organizational equipment was saved, but 50,000 gallons of gasoline and a number of disabled aircraft were burned. The 31st, 52d, and 81st Fighter Groups and the

47th (Light) Bombardment Group operated to the limit of endurance. Weather prevented adequate coordination of results of reconnaissance, and aircraft searched for their targets through the mist. The speed of the withdrawal to interior airfields did not stop operations, for upon returning from missions flown from old fields, our aircraft came down at the new fields for refueling, and took off from there.

Rommel's retreat was pressed closely by our armor and aircraft, and his ranks were shelled in the Kasserine Pass by Allied artillery and strafed by Allied planes. German elements left to hold the pass were dislodged and the Allies pushed on to the Kasserine plain. Patrols also advanced south from Sbiba, which had remained continuously in our hands.

The Allied advance was slowed by German demolitions and mine fields, which also enabled Rommel to avoid contact and take up a position on the general line Hadjeb-el-Aioun, Sidi-bou-Zid, and Gafsa. If the German commander had contemplated cutting through to Bone, or even to Le Kef, he had completely failed. If he intended merely to gain elbow room and to protect his lines of communication, the result was scarcely worth the price he paid. In any event he had to turn quickly to meet the threat from the south.

Air Victories and Losses, 8 November 1942-18 February 1943

The following table, from NAAF *Air Intelligence Weekly Summary,* No. 29, does not include aircraft destroyed and damaged on the ground, but does include USAAF planes destroyed in the air or missing more than one week:

Organization	E/A destroyed	E/A probably destroyed	E/A damaged	Allied A/C lost and missing
Eastern Air Command	255	55	160	No report
Twelfth Air Force	384	127	166	184
Lafayette Escadrille	5	----	----	5
	644	182	326	189

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The reorganization planned at the Casablanca Conference was implemented in February 1943. All Allied ground forces opposing Rommel and von Arnim were united into the 18th Army Group, commanded by Gen. Sir Harold R. L. G. Alexander, who set up his headquarters on 20 February at Constantine. Under him were the British First Army, commanded by General Anderson; the French XIX Corps, with General Juin in charge; the U. S. II Corps, headed by General Patton, and the British Eighth Army with General Montgomery as GOC.

On 18 February the Mediterranean Air Command, led by Air Chief Marshal Sir Arthur Tedder, and including all Allied air forces in the Mediterranean, was organized. The USAAF and RAF components facing Rommel and von Arnim were comprehended in the Northwest African Air Forces under General Spaatz. Under it were Coastal Air Command, headed by Air Marshal H. P. Lloyd and made up of XII Fighter Command and RAF elements; Strategic Air Force, commanded by General Doolittle and composed of XII Bomber Command and RAF night bombers; and Tactical Air force, in charge of Air Marshal Sir Arthur Coningham and including the RAF 242 Group and Western Desert Air Force (embracing USAAF elements), and XII Air Support Command. A Tactical Bomber Force was added on 20 March. Coastal Air Command, composed of general reconnaissance aircraft, bombers, and day and night fighters, was responsible for defense of ports and convoys, and for shipping sweeps and submarine patrols. Strategic Air Force, made up of bombers and long-range fighters, was intended to attack enemy bases and convoys. Tactical Air Force, comprising chiefly fighters and light bombers, was to supply close cooperation with the ground forces. General Eisenhower was in command of all Allied forces in the western Mediterranean, with General Alexander as deputy.

As of 27 February 1943, Coastal Air Force had 162 aircraft assigned. This total included Spitfires, Hurricanes, Beaufighters, Hudsons, Swordfish, and P–39's. Strategic Air Force had 426 B–17's, B–25's, B–26's, P–38's, P–40's, and Wellingtons. Under the Tactical Air Force, XII Air Support Command had 178 assigned aircraft, made up of Spitfires, P–39's, and A–20's; while Spitfires, Bisleys, and Hurribombers comprised 242 Group's 184 assigned planes.

The following paragraphs are taken from Tactical Air Force *Report on Tunisian Operations:*

One of the greatest problems confronting the Tunisian forces in February was the availability and serviceability of landing grounds. In the Northern sector the only suitable area was the valley running east from SOUK-EL-ARBA and SOUK-EL-KHEMIS, ideal for fine weather conditions with ample space for any number of landing grounds, but badly placed amongst high hills for the cloudy winter weather and with heavy soil which went unserviceable on the slightest hint of rain.

There was, however, no alternative, and three landing grounds with all-weather strips were used in this valley at the outset; unserviceability was high and greatly hindered a force operating against enemy air located in open country with reasonable runways. The Sommerfeld tracking was proving of very little value when laid on normal soil, but fortunately some sandy soil was found which provided a foundation and therefore gave reasonable certainty for operations except under heavy rainfall when pools gathered on the landing strip.

In the central sector, high ground and mountains stretched northeast from KASSERINE to PICHON, and the country directly to the west was extremely bad for landing grounds, either from the point of view of flying or of ground serviceability.

To the east the country was open semi-desert, particularly in the THELEPTE area, and most suitable for all-weather landing grounds. Farther west, and out of fighter range of the front line, the CANROBERT and CONSTANTINE plains offered good landing ground facilities for bombers, although unserviceable after heavy rain; also, it was frequently difficult to get clear of the mountains and rendezvous with fighters in open country.

To operate in this area at all successfully, it was vital for the Army to secure the open country to the east of KASSERINE. This was done, and throughout the battle these landing grounds at THELEPTE and SBEITLA gave a higher rate of serviceability than any others until settled weather dried up those in the Northern area.

Western Desert had more problems in the MEDENINE area than heretofore, but on the whole landing grounds did not present any problem to them even during the advances to the North, when the serviceability and the available space of the coastal plain remained high throughout. The rapidity of the German retreat from the WADI AKARIT enabled them to use all the Axis landing grounds south of ENFIDAVILLE, with only minor extensions and improvements.

The construction program ahead for airfields was a heavy one. The aim was to provide a semicircle of landing grounds capable of housing the whole tactical fighter and bomber force around the Axis bridgehead, the main centers being SOUK-EL-KHEMIS, LE KEF, KAIROUAN, and the SOUSSE area. The plan could not be put into effect until the enemy were pinned back in the Southern sector, and yet the new airfields had to be prepared to keep step with

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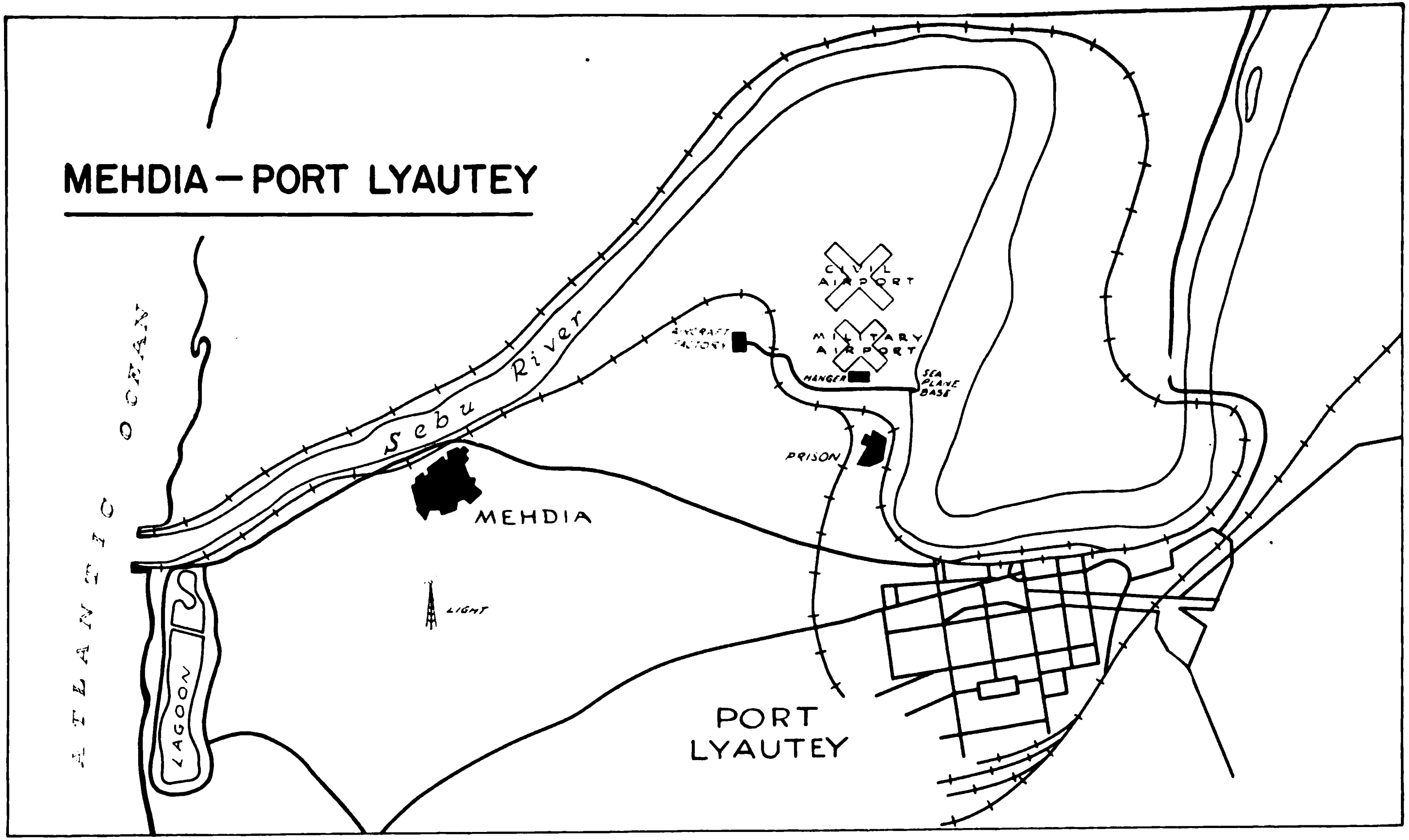

MEHDIA—PORT LYAUTEY

the advance of the Eighth Army. It was a case of employing all resources to meet requirements at short notice.

Machinery for the construction of landing grounds was a problem in the early stages, but U. S. Aviation Engineers and British airfield construction groups worked in close unison and good will, and on this note the heavy program was carried out according to timetable.

Von Arnim took advantage of the regrouping of units that followed the formation of the 18th Army Group to launch an assault against the British First Army on the northern front. On 26 February several prongs issued from the German lines heading toward Sedjenane, Beja, and Bou Arada, strongly accompanied by dive bombers. The British, caught at a disadvantage, and mustering only inferior numbers, were forced back in three weeks of bitter fighting. A stand was then made despite the heavy rains which had turned the clay roads into sloughs and prohibited the use of motor transport. Pack animals had to be used to carry supplies over the precipitous mountain paths. But the hardships were conquered and von Arnim was pushed back by early April practically to his original positions; most important of all, the British retained Medjez-el-Bab, the key to Tunis.

Air cooperation against the German attack was more vital than in any other sector, as the enemy was operating from firm bases in Tunis and Bizerte which were capable of rapid reinforcement and had a number of all-weather runways. The situation justified 242 Group's maximum effort in compliance with instructions to render full air cooperation with the First Army while the German attack continued. The available forces were nine squadrons of Spitfires, of which only four were on forward landing grounds, one squadron of Hurribombers, and two squadrons of Mitchells. These forces were employed to the full, the main feature being that fighters were given permission to strafe any moving targets throughout the period. This was necessary because of a shortage of bomber force and unsuitable bombing weather.

Tactical reconnaissance, carried out on a heavy scale, located a large number of targets for the Hurribombers and Spitfires in the battle zone itself; while the medium bombers, operating from the Constantine plain and using the all-weather airfield at Tingley, near Bone, attacked communication centers and in particular Mateur. After severe fighting the enemy attack was held, and in March it ceased to be a major threat. During that period 242 Group carried out

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3,500 fighter sorties and 250 fighter-bomber sorties, and escorted 160 medium bomber sorties. They destroyed many enemy aircraft and a large number of motor vehicles. The weather was not suitable for a high rate of interception, nor were the forward control and warning systems fully operational, but by the end of the period the Luftwaffe was well under control and attacks on our troops were on a light scale.

The Tunisian Spring Campaign

The Tunisian spring campaign consisted of two principal phases:

1. The breaking of the Mareth Line, beginning 20–21 March 1943, and Rommel's retreat to a line north of Enfidaville.
2. The advance of the Allied armies on Bizerte, Tunis, and Cape Bon, 22 April–13 May.

According to the aircraft status report of 21 March 1943, Tactical Air Force had 567 aircraft assigned, of which 319 were USAAF Spitfires, P–39's, P–40's, and A–20's, and 248 were RAF Spitfires, Bisleys, and Hurribombers. By 1 May, 22 B–25's and 18 P–39's had been added. The tasks allotted to the Tactical Air Force during the spring campaign were:

1. 242 Group to maintain and hold fighter superiority over enemy aircraft in the Tunis and northern areas, and to be ready to detach squadrons to give operational support to XII Air Support Command.
2. XII Air Support Command to obtain and hold air superiority over the enemy air forces opposed to it to an extent which would insure complete freedom of action by the Western Desert Air Force in direct ground cooperation with the Eighth Army. In addition, XII Air Support Command to protect the forward move by the U. S. II Corps.
3. Tactical Bomber Force to provide the striking force to XII Air Support Command, with the primary task of hitting enemy airfields.
4. Western Desert Air Force, from the time (20 March) of the attack on the Mareth Line, to concentrate the whole of its forces upon direct cooperation with the Eighth Army.

5. By agreement with the Air Officers Commanding, Mediterranean Air Command and Northwest African Air Forces, the Strategic Air Force to be available to bomb enemy landing grounds, during the critical days of the attack, on request of Northwest African Tactical Air Force.

Night bombers of the Western Desert Air Force were to keep up a continuous pounding of the enemy forward troops in the Mareth region on the two nights prior to the attack, and to continue in advance of our troops as the battle progressed.

Tactical Bomber Force Bisleys, supplemented by Wellingtons from the Algiers vicinity, would attack the southern enemy airfields with road movement as alternate targets.

This general policy was agreed to in conjunction with the Army formations concerned and dictated by General Montgomery's realization that ground attacks alone might not be sufficient to break the Mareth and Gabes lines within the allotted time.

We have examined the Tactical Air Force strength of 21 March 1943. On this date the Strategic Air Force aircraft status report showed the USAAF component to have 383 aircraft assigned—B–17's, B–25's, B–26's and P–38's. The RAF had 24 Wellingtons. By 1 May 174 more USAAF planes had been added; these were B–26's, B–17's, and P–40's, bringing the grand total to 581 aircraft.

It was during the spring campaign in Tunisia that the Strategic Air Force came into its own. Hitherto its principal objectives had been the ports, airdromes, railways, and roads of Tunisia; now, even while increasing the intensity of its attack in Tunisia, it raised its sights and even more seriously undertook to include seaborne traffic, together with ports in Italy and the Mediterranean islands.

The Twelfth Air Force before 19 February had flown slightly fewer than 200 bombing missions, all but five on Tunisian targets, and had dropped about 3,300 tons of bombs. March was still almost wholly devoted to Tunisia. In April about 200 bombing missions were flown, one-fifth against Italian targets; about 3,700 tons were dropped. May, with 186 missions and 6,225 tons, was concentrated almost entirely on Italy. The Tunisian work was done.

Strategic Air Force work was outstandingly effective. The U. S. heavies and mediums, escorted by P–38's, flew over the targets during daylight hours and did precision bombing. Wellingtons in ever-increasing numbers further smashed the targets. Frequently Ninth Air Force Liberators chimed in with the powerful blasts of their bombs. Bomb damage assessment, both by photographic interpretation and by visual inspection on the ground after the campaign, showed extremely gratifying results. The port areas of Sousse, Sfax, La Goulette, and Bizerte were all but completely devastated. Marshalling yards were cratered and rolling stock strewn about in hopeless ruin. Airdromes were abandoned or the landing areas limited, while hangars were blasted and fire-twisted, with irreplaceable Axis aircraft heaped in airplane graveyards.

Implicit in the preceding paragraph is a picture of the purpose and methods of air power. Long before intensive ground operations were started, the Strategic Air Force began the softening-up process in the enemy's rear. First, airdromes and landing grounds were bombed to immobilize the opposing air force as far as possible and to reduce its interference with the next step, the bombing of communications, principally ports and railway yards. The third phase was concerned with isolating the enemy's combat troops from their bases; here the Tactical Air Force usually performed the major share of the task before undertaking the fourth phase, direct cooperation with the ground force advance. Meanwhile, Strategic was pounding away in preparation for the next drive into enemy territory. There was in addition Strategic's commitment of breaking up the enemy's more distant communication centers and airfields in order to hamper his reinforcement, supply, and air cooperation with his troops.

The use of tactical aircraft was developing. During the early part of the Tunisian campaign they had been used mainly in direct ground cooperation, either along the front or against vehicles directly in the enemy's rear. In part this was in response to the natural desire of ground troops and commanders to see their cooperating aircraft while in action, and it no doubt also was brought about by our tendency to separate the purely fighter from the air-ground cooperation function. Our losses gave ample evidence, however, that our tactics were not appreciably affecting the enemy's control of the air. The result was that ground strafing gave way to fighter sweeps as a primary mission. Thus fighter-bombers were able both to harry the enemy on the ground and to meet him in the air. The P–39 gave way to the P–40 and the P-38, and eventually to other types intended to drive the Axis from the sky and then to devote themselves to ground installations and traffic. By April the evolution was well under way.

Strategic Attacks on Air Fields, April 1943

Attacks on enemy airfields by the Strategic Air Force opened with a 4 April assault on Capodichino by 27 B-17's. Next day, strikes were delivered against Bo Rizzo, Bocca di Falco, and Milo. Others followed on Castelvetrano, Decimomannu, Monserrato, Elmas, and Villacidro. The damage was widespread, particularly on parked aircraft. Later in the month repeat attacks were made, and Grosseto and Alghero were added. The Ninth Air Force made one attack on Bari airdrome, covered the field with craters, and set fire to the buildings. The total bombs dropped in April, including those of the Tactical Air Force, were 3,675 tons; previous to April the total tonnage dropped by Northwest African Air Forces was only 2,253 tons.

Naples, Palermo, Messina, Trapani, and of course Tunis and Bizerte were bombed heavily during this period. Wellingtons, preceded by Pathfinders, visited Tunis three times and Bizerte twice. Day bomber attacks on these two ports were hindered by weather, but effective strikes by B-17's were delivered in 18 sorties against Tunis and 27 against Bizerte. Also, Ferryville was hit by 16 B-17's and its docks were badly damaged.

On 4 April Naples received 99 Middle East-based Liberator and 64 B-17 sorties. The Fortresses hit the power and gas plants, barracks, docks, and shipping. Palermo took three attacks from Northwest Africa and five from the Middle East. B-17's flew 95 sorties on the 16th, 17th, and 18th, and hit six ships, the power station, and the marshalling yards. Messina, which had already suffered extensively from Malta-based and Middle East bombers, continued to be scourged, with the ferry slips as principal targets. Trapani received one Wellington and two B-17 attacks. The Fortresses registered direct hits on merchant ships and barges. Other Strategic Air Force missions were directed against Marsala, La Maddalena, and Carloforte.

Complete statistics of Axis vessels sunk or damaged are hard to arrive at, as accounts differ widely without giving the bases of decisions. *RAF Middle East Review* (No. 3, p. 24) states that in April

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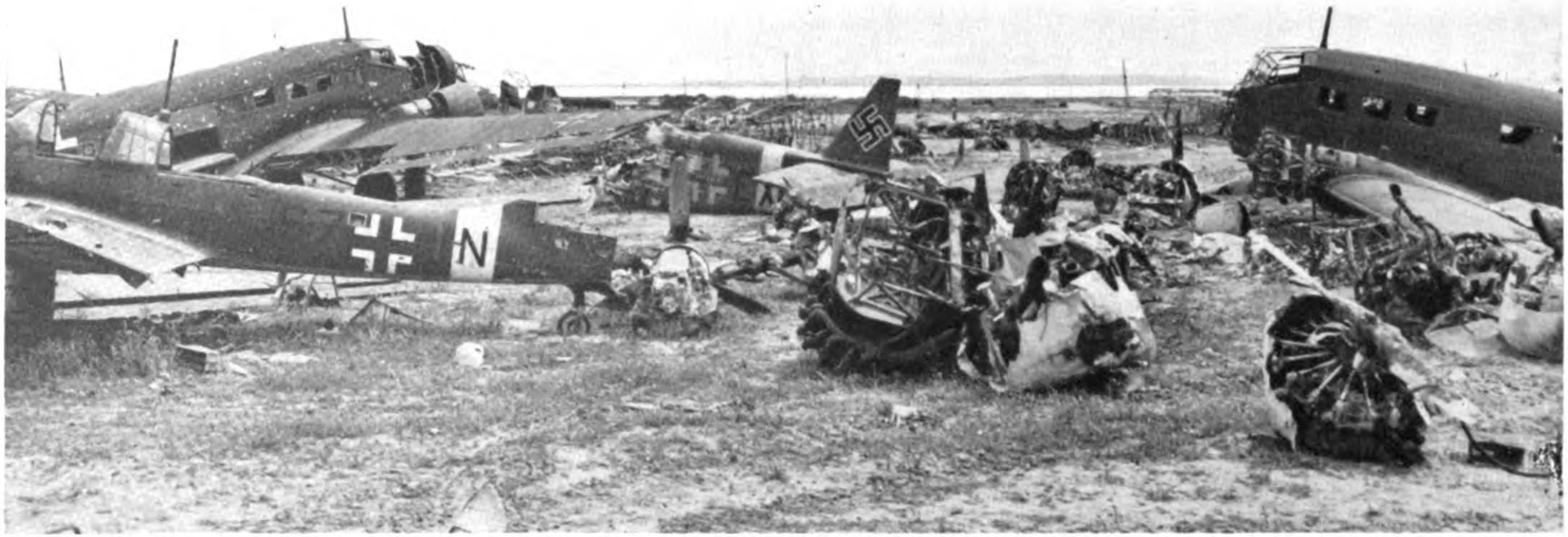


Official Photo USAAF

LUFTWAFFE BONEYARD. Wreckage of German and Italian aircraft litters the El Aouina airfield at Tunis after concentrated Allied air attacks.

20 ships were sunk, 16 severely damaged, and 32 damaged; this figure apparently refers to the results of attacks on Axis harbors and at sea, and must apply only to sizeable ships.

General Patton's advance on Gafsa began before General Montgomery's push toward the Mareth Line, but the two movements soon merged into one. On 17 March the U. S. 1st Armored Division defeated the Italian defenders of Gafsa and entered the town. By the 22d, in spite of rainy weather, Maknassy was occupied. Meanwhile the U. S. 1st Infantry Division had advanced beyond El Guettar, and between that point and Maknassy the front was established.

The XII Air Support Command was active in breaking the way, and for the first time light and medium bombers in 18-aircraft formations rendezvoused with fighters and blasted targets. On the 19th a full-dress air attack was commenced by Tactical Bomber Force on Tebaga and Gabes landing grounds, and during the next two days Strategic also delivered maximum-weight strikes. Spitfires covered the returning bombers and spread havoc among pursuing Messerschmitts. Fragmentation bombs were employed, and experiments were conducted to determine the best bombing patterns to use in order to destroy aircraft on the ground. The object of interdicting the use of the Axis air forces against the Eighth Army was almost perfectly attained; in these days only five enemy aircraft appeared over the Eighth Army in offensive roles.

The bombing of German-held southern Tunisian airfields was almost continuous; those well forward were covered every 15 minutes on the 22d while the Desert Air Force was attacking the Ksar-Rhilane position. By 7 April the enemy had abandoned the forward airdromes, and combined assaults by Tactical and Desert Air Forces soon forced his aircraft out of Sfax.

General Montgomery launched his frontal attack on the Mareth Line on the night of 20–21 March, well preceded by night bombers. It took two days to make good the crossing of the Oued Zigzaou, the natural tank obstacle on Rommel's front. Western Desert's full force was utilized in cooperating with the advance by day and night, and it was of great aid in bombing tanks, convoys, and gun positions, and in the general softening-up of the enemy.

The key to General Montgomery's strategy was a "left hook" to Rommel's right near El Hamma, which was delivered by the New

Zealand infantry and the British 1st Armored Division. This movement was preceded on 26 March by one of the most intensive and concentrated air cooperation offensives on record up to that time, in an effort to blast a hole through Rommel's panzers.

Air Cooperation With New Zealanders

Since the scene of the projected operation presented navigation difficulties, columns of colored smoke were sent up from landmarks, and the British lines were defined by smoke of a different color. British artillery then shelled the Axis strongpoints with smoke shells to indicate them to fighter-bombers. Half an hour after the air attack began, artillery laid down a creeping barrage which moved forward at the rate of 100 feet a minute, marking the bomb line ahead of the ground advance. The fighter-bombers and light bombers bombed and strafed particular positions on which they were briefed, and the Hurricane tank busters assailed the enemy's armor. Spitfires were flying high cover.

Rommel retreated to a hastily prepared line behind the swollen waters of the Wadi Akarit. An attempted German ground counterattack was nipped in the bud on 6 April by a heavy concentration of bombers and fighter-bombers, though a tank-buster attack on a concentration of armor at Chekira lost heavily because of a ring of mobile flak. That night Rommel's troops left their position and streamed northward. Both the Western Desert Air Force and XII Air Support Command dedicated themselves wholeheartedly to harassing the retreating enemy forces, destroying on the first day alone more than 200 motor vehicles. As the retreat progressed it outran the range of the Western Desert Air Force, and 242 Group now joined XII Air Support Command in the attack. There was little interference from flak or, most of the time, from enemy fighters. Pressure by the U. S. II Corps in the Maknassy area, and by the British IX Corps, forced an acceleration of Rommel's flight by taking Fondouk and threatening Kairouan, which controlled his communications. Sfax and Sousse fell to the Eighth Army, which then broke through Rommel's new position at Enfidaville on 19 April. The German commander withdrew northward a few miles and dug in, strengthening his position with mine fields.

It was after the beginning of the retreat from the Mareth Line that our offensive against the Axis air transport shuttle service between Sicily and Tunis reached its height. Air transport had made possible the consolidation of German control and had enabled the enemy to offer bitter resistance. Daily traffic between Italy and North Africa was in excess of 100 sorties and rose to a peak of nearly 250. About the middle of March, the Strategic Air Force offered a plan for the suppression of this traffic. The plan's features were:

1. Simultaneous bombing attacks on the main transport landing grounds in Sicily, Italy, and North Africa.
2. P-38 fighter sweeps in the Sicilian Straits at the same time, to catch transports in transit.
3. Spitfire and P-40 sweeps over the landing areas to shoot down any aircraft that got through, and to protect both P-38's and Strategic Air Force bombers by pinning down hostile Africa-based fighters which might seek to interfere.

Also, it was planned to let the Axis build up sufficient numbers of transport aircraft so that their loss would be a serious blow, and to time the attacks with battle progress so that the lack would come when air transport was most needed.

The initial effort came on 5 April. On that day 12 missions were flown by the Strategic Air Force in connection with the transport-throttling program, 6 missions by 142 P-38's, 2 by 54 B-25's and 4 by 91 B-17's—a total of 287 sorties. Forty enemy planes were shot down in the air, and photographic coverage added enough destroyed on the ground to bring the day's total bag to 201 aircraft. Our losses were 9 shot down and missing. As a bonus, an enemy destroyer was blown up and direct hits were made on 2 other vessels. Transport airdromes at Sidi Ahmed, El Aouina, Bo Rizzo, Bocca di Falco, and Milo were bombed, and on the same day Ninth Air Force B-24's struck at Naples, one of the termini of the shuttle service. On 10 April the operation was repeated on a smaller scale and brought down 45 Ju-52's and 12 fighters. The following day an entire convoy of 21 transports was downed, with 5 of its escorts. A few hours later 5 more transports were annihilated by P-38's.

With the Germans' southern army in full retreat to Enfidaville the shuttle service took a spurt, and Me-323's were added to Ju-52's; these flew across in large convoys numbering not more than 2 a day, escorted by short-range fighters from both sides. The whole Spitfire and P-40 force of the Western Desert Air Force was now concentrated in an effort to catch these convoys during the fleeting minutes when they could be reached. At last, late in the afternoon of 18 April, about 100 Ju-52's were intercepted, heavily escorted by fighters. Seventy-three transports and 16 fighters were shot down, and some of the rest crash-landed on the beach of Cape Bon peninsula. The next morning 12 more transports and 8 escort aircraft were down in ruins; on the 22d, 21 ME-323's were intercepted and all were destroyed, along with 16 fighters. All but 1 of the formations were under escort, but the protectors failed to protect. In these anti-transport operations no fewer than 432 enemy aircraft were destroyed, 341 of these in the air, at a cost to us of about 35.

Thereafter the use of enemy air transports was confined to the nights, but with their limited capabilities they failed to accomplish much. During the last nights of the campaign, with only two airdromes available to the foe, our fighters further reduced the meager number of arrivals. This campaign to interdict the use of German air transport undoubtedly played an important part in bringing about the enemy's sudden and complete collapse.

The Tactical Air Force came into its own with the beginning of the phase of the campaign wherein the Allied armies pushed on to Bizerte and Tunis for the kill. Since the entire area was within the range of Tactical Air Force planes, the organization was simplified by subordinating XII Air Support Command to 242 Group. The Western Desert Air Force and 242 Group were divided by the Medjerda River, with Western Desert on the south and 242 Group on the north. Headquarters of Tactical Air Force during this period was located at Haidra and later about 18 kilometers southwest of Le Kef. The Tactical Air Force was given four tasks:

1. To destroy the Axis air forces in Tunisia.
2. To disrupt the enemy's supply lines, both by air and by sea.
3. To furnish direct cooperation with ground forces.
4. To prevent another "Dunkerque" by blocking the enemy's escape to Sicily.

Because the Strategic and Coastal Air Forces were involved in carrying out certain aspects of the above program, the following account will not be confined to Tactical's share. Strategic's role should also be borne in mind:

1. To neutralize Axis ports in Sardinia, Sicily, and Italy in order to interdict their use as bases of supply or the reception of evacuated troops.
2. To neutralize Axis airdromes in Sardinia, Sicily, and Italy in order to prevent their use as bases by Axis aircraft which might hamper Allied action in Tunisia.
3. To attack Axis air and sea transport wherever found.
4. To begin the softening-up process for the next Allied invasion, that of Sicily.

In preparation for the final assault on von Arnim and Rommel, the U. S. II Corps was moved to the extreme north. The First Army was centered on the key position of Medjez-el-Bab, and the French cleared the hills west of Enfidaville. The Eighth Army remained north of Enfidaville facing Rommel. The plan called for the Americans to drive on Bizerte while the British First Army, reinforced by elements from the Eighth, was to push toward Tunis. The Eighth Army was to engage Rommel and attempt to cut off any move to retreat into the Cape Bon peninsula. These moves were not regarded as easy, for the enemy's shortened lines enabled him to bring greater force to bear at threatened points.

End of the Axis in Tunisia

Operations were to begin in the center on 22 April and in the north on the 23d. Rommel, sensing the impending attack, struck on the night of the 21st between Medjez-el-Bab and Goubellat, but was unsuccessful and lost 33 tanks and 450 prisoners. The First Army's advance, however, was stiffly resisted, with mine fields presenting real hindrances. The French occupied Pont-du-Fahs, but were held up there. A week was spent in difficult local clearing actions in the hilly country. By 4 May the Americans, flanked on the coast by the French, had fought their way into Mateur. From there they went on, and on 7 May entered Bizerte. On the 9th the Germans in that sector surrendered, giving up 38,000 prisoners.

Meanwhile the main push by the First Army got under way on the night of 4 May. Two days later Axis opposition was crumbling and the British entered Tunis on 7 May. The British armor then split into two parts, one heading northwest and the other southeast of Tunis to cut off the German retreat to the Cape Bon peninsula. Soliman, between the mountains and the Gulf of Tunis, fell on 10 May and the British swept into the peninsula, breaking up the last German resistance. Colonel General von Arnim surrendered on the 12th, and the Italian Field Marshal Messe the next day. Altogether, 248,000 prisoners were taken.

In order to perform its first task, that of destroying the Axis air forces, 242 Group laid on heavy attacks between 17 and 21 April on the airfields in the Protville region, while the Western Desert Air Force concentrated on night bombings of the eastern landing grounds in the Cape Bon peninsula. Meanwhile, the Strategic Air Force was attending to the airfields at Tunis and Bizerte. It soon became apparent to the German high command that its air resources would be lost if left in Tunisia. About the 22d they began to withdraw their planes to Sicily and Sardinia; the Ju–87's disappeared first. With this exodus the German Air Force, save for sporadic Sicily-based operations, ceased to play any serious part in the Tunisian battle and our attacks on Sicilian airdromes correspondingly dropped off. 6 May was the last day that enemy aircraft appeared in Tunisia. Some enemy aircraft tried to intercept our shipping and air-ground cooperation, but in three hours 20 Axis planes were shot down for the loss of two.

During this period the enemy depended almost wholly on air transport and small vessels. Supplies brought down the "leg" of Italy were ferried across the Strait of Messina and taken to western Sicilian ports. The menace of Malta-based aircraft made eastern Sicilian ports unsafe for this traffic. Large merchant vessels normally loaded at Naples and hugged the Sicilian coast on the way to Tunisia, or sailed out toward Sardinia to avoid Malta's aircraft. It was found that small ships could make the dash overnight from Sicily and off-load on the Tunisian beaches or discharge into lighters; this method was necessitated by the continuous blasting of the Tunisian ports.

High-altitude bombing, very effective against ships at sea, could sink a medium merchant vessel with an average of 28 tons of bombs; thus a formation of 18 B–17's could hope to sink two ships. B–25's and

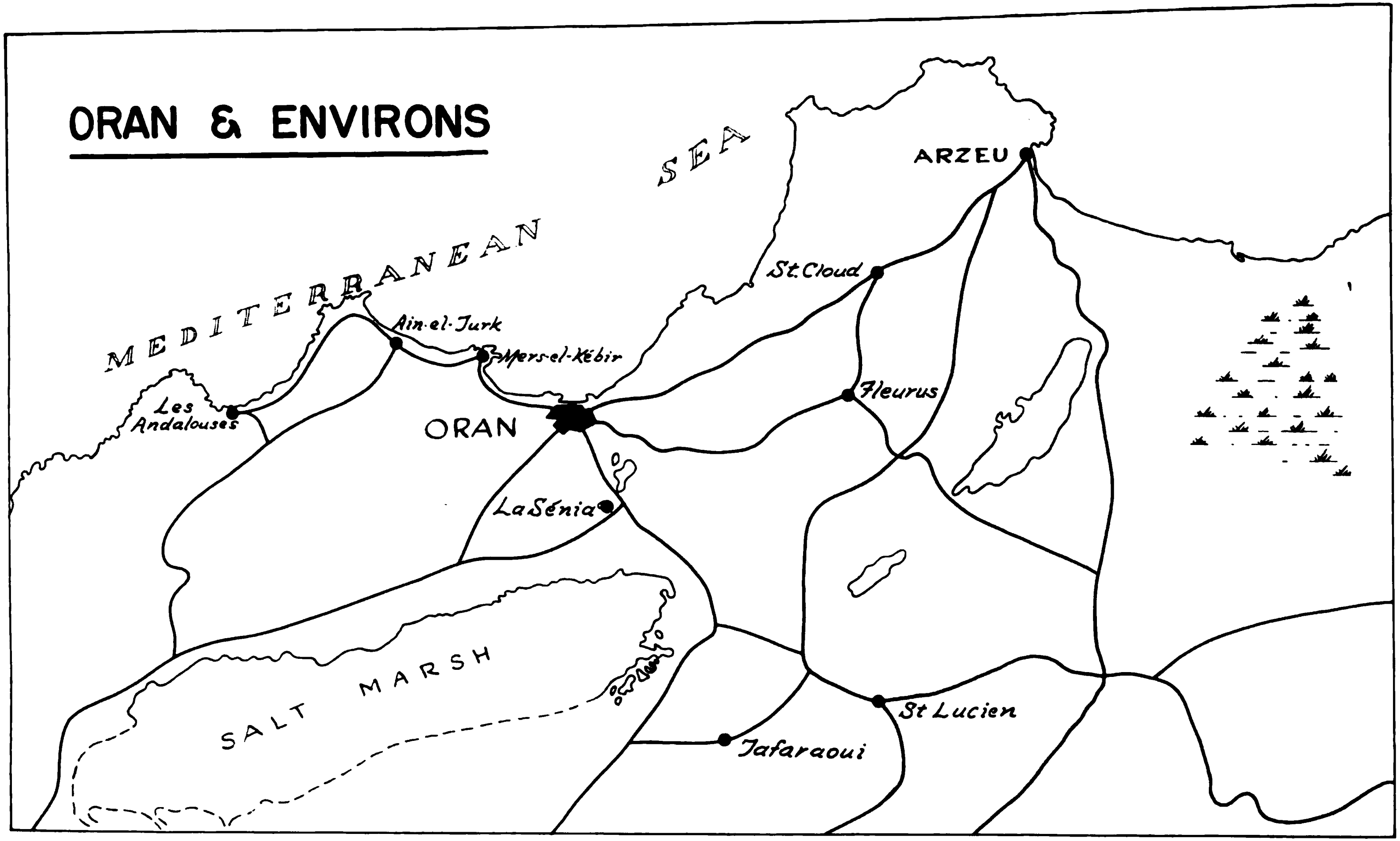
P–38's also proved effective, and were employed increasingly at sea. Convoys were usually attacked from the rear; each attacking flight of six, staggered at altitude intervals of 300–500 feet to allow room for evasive action, concentrated on one vessel. About 50 percent of the sorties failed to make strikes. The Coastal Air Force also engaged in day and night shipping sweeps. Strategic Air Force statistics for April, probably incomplete, showed 6 vessels sunk, 20 severely damaged, and 30 damaged. "Severely damaged" was defined as meaning that a ship was last seen heavily listing, in sinking position, or in flames.

Early in April photographic reconnaissance revealed that two of the Italian Navy's three remaining heavy cruisers, the *Trieste* and the *Gorizia,* were lying at La Maddalena. The third, the *Bolzano,* was undergoing repairs at Spezia. On 10 April 84 heavily escorted B–17 sorties sank the *Trieste* and severely damaged the *Gorizia,* which nevertheless was able to steam to Spezia for repairs. Wellingtons followed with blasts on that port. Toward the end of April the Tactical Air Force found opportunity to begin attacks on shipping in the Gulf of Tunis. Complete statistics are not available for April, but from 28 April to 13 May the Tactical Air Force claimed 22 small vessels (including 2 destroyers) sunk, 12 probably destroyed, and 9 damaged.

Air Cooperation in the Fall of Tunis

From 17 to 29 April, attempts were made to break through the German defensive line, first by the Eighth Army, second by the IX Corps, and third by the V Corps. All these drives were given full air cooperation, with no outstanding features except universally bad targets in very broken country. Bombing on pinpoints was practically the rule, and from photographic results it is clear that a very high standard of this class of bombing was maintained by the Tactical Bomber Force.

The U. S. II Corps, making excellent progress in the north, was within 16 miles of Bizerte and had pushed forward a salient toward Mateur. Cooperation was given in this sector whenever requested, and several heavy attacks were made on the enemy communication center at Mateur, but the terrain where the immediate fighting was taking place did not lend itself to air attacks by either side, nor could



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the II Corps proceed with the main attack on Bizerte until strong forces on its southern flank had reached the plain of Tunis.

On 29 April it was clear that only the orginal conception, a break-through in great strength directly on Tunis, could succeed. Maximum available air power was to participate in this. The 242 Group, as Air Headquarters to the First Army, was given operational control, having at its disposal the whole Tactical Air Force, including air co-operation from the Western Desert Air Force and such medium bombers of the Strategic Air Force as were not required for vital strategic targets.

The operational plan provided for the air attack to commence on the evening of 5 May, with preliminary bombing in the Zaghouan area to soften positions on the ground which were to be stormed that night. The following day, starting at first light, the combined bombers of the Tactical Air Force put down a creeping barrage in front of our advancing army. Bombing was continuous from dawn to mid-day, with a heavy scale of attack continuing throughout the afternoon. By that time, however, the rapid advance was ahead of schedule, so that calls from the Army had to be waited for. Thus the number of sorties flown was well below the maximum effort which could have been exerted.

From 5 May, 205 Group was temporarily placed for operational control under the Northwest African Tactical Air Force in order to employ to the full the Wellington night-bomber effort in cooperation with the ground operations and in the bombardment of the enemy's rear-area communications. The axis of advance was Borj-Frendj-Djebel-Achour-Massicault-St. Cyprien, and these targets were worked over to the exclusion of everything else. By evening it was apparent that the battle for Tunis had been won. During the day 2,154 sorties had been carried out in cooperation with ground forces. This was a record for any Allied air force in any theater up to that time.

The following morning confirmation came that the main break-through had been accomplished. Our troops were in the outskirts of both Tunis and Bizerte and the enemy forces had been split, one segment to the north and west of Tunis and Bizerte, the other to the south and east in the region of the base of the Cape Bon peninsula and Enfidaville.

Tactical Cooperation 8–13 May 1943

The ground situation was changing too rapidly during the drive on Tunis for cooperation calls to be waited for or acted upon, and the air forces were ordered to disrupt the enemy's already disorganized movement. In particular, strong bombing and strafing attacks were made on the road from Tunis to Bizerte in the vicinity of Protville, on the roads and bottlenecks leading to the Cape Bon peninsula, and on the westward defile out of Tunis at Hamman Lif. The enemy forces between Tunis and Bizerte were surrounded; on 10 May they surrendered.

The important sector, however, was to the east, where large forces might reach the Cape Bon peninsula and fight a delaying action. The air task in this area was to assist our armor to force the defile at Hamman Lif, while fighter-bombers maintained constant pressure. On 9 May the Army broke through and moved rapidly down to Bou Ficha; this was the main stroke required to complete the dislocation of the enemy. Meanwhile all other air components were strafing and bombing any movement on the peninsula, blasting harbors, landing grounds, and coastal shipping.

By 10 May, with the enemy surrounded, no appreciable armed forces had reached the peninsula. From that day until the final surrender on 13 May, our air power was active against ground targets, but only to keep the pressure on until the end. Isolated pockets were attacked upon Army request. The last operation in the North African campaign was an attack by Western Desert Air Force bombers on the remaining enemy pocket north of Enfidaville.

The Tactical Bomber Force on 11 May 1943 had been in operation for 53 days, of which 41 were flying days. In that period it had flown 3,154 day and 783 night sorties, dropping 2,262.5 tons of bombs. This record was compiled in spite of shortage and unsuitability of aircraft crews, of equipment, and of maintenance crews. The lessons learned by the Tactical Bomber Force were:

1. That fighter-bombers were better suited than mediums for close cooperation, and that they could better utilize forward airfield space.

2. That medium bombers were better adapted to close-in strategic bombing, which is uneconomical for heavies and beyond the range of fighter-bombers.
3. That formation leaders should make reconnaissance flights to areas scheduled for attack.

During the campaign from 18 February to 11 May, less than three months, Tactical Air Force units completed 59,000 sorties, destroying 572 enemy aircraft, more than 500 motor vehicles, and 33 miscellaneous ships. These same units supplied the greatest weight of air attack ever undertaken in cooperation with ground forces up to that time.

In May one of the air forces' chief tasks was to interdict escape of the beaten Axis forces from Tunisia. For the first four days of the month the weather was so bad that few effective sorties could be flown, but on the 5th, Strategic and Tactical together sank two ships, severely damaged one, and damaged four. Tunis and La Goulette docks and marshalling yards were also damaged by 53 sorties of B–17's. Six SM–82 bombers and three fighters were also shot down during the day.

On the 6th, Strategic sank six Siebel ferries and four other small boats, and damaged five; all were headed for Sicily laden with troops. Meanwhile air strikes were delivered on Marsala, Trapani, and Favignana. At Marsala 10 ships were hit, two severely; at Favignana near misses were scored on two more vessels. On the same day Tactical Air Force aircraft blew up a destroyer and set another on fire. During the first week of May, 20 enemy vessels were sunk, seven probably sunk, and 12 damaged.

For the remainder of the campaign numerous Sicilian and Sardinian ports were bombed, chief among them Palermo, Marsala, and Cagliari. The strategy had now passed from cooperation and interdiction to softening-up for the next invasion. Palermo was the victim of 122 B–17's and 89 mediums on 9 May, and later, of 23 Wellingtons. A total of 458 tons of bombs was dropped. These blows were very destructive, with numerous fires and explosions among docks and railway yards. One ship was blown up. Seventeen enemy fighters were destroyed, with one B–17 shot down and more than 50 others damaged, mostly by flak. On the 11th Marsala was visited by 180 bombers, and again Wellingtons followed to the number of 22. About 450 tons of bombs were unloaded; numerous hits were scored on docks, railway yards, shops, and warehouses; and fires were started that were visible 90 miles away.

On the 13th Cagliari was bombed by 107 B-17's, 96 B-25's, and 22 Wellingtons, which dropped 438 tons. One ship exploded and four more caught fire. As a result of this highly successful attack, Cagliari virtually lost its entire value as a port. Other effective assaults were made on Olbia, Alghero, Porto Torres, Civitavecchia, and Porto Ponte Romano.

With Axis aircraft now withdrawn to Sicily and Sardinia, airfields on those islands provided fruitful hunting grounds. Pantelleria was the prey of Desert Air Force light bombers, U. S. mediums, and Strategic's P-38's on 8 May and for the two days following. The landing ground was put out of commission, the doors of the underground hangar were jammed, and a large assortment of stores and aircraft was destroyed. Meanwhile bombers of the Strategic Air Force flew over Milo and Bo Rizzo airdromes, and Wellingtons over Villacidro, Elmas, and Decimomannu. The havoc was especially great among parked aircraft. The Strategic Air Force attacks were both made on the same day, 10 May, when 45 bombers attacked Milo airfield, causing fires and explosions and destroying 15 aircraft; at Bo Rizzo, attacked by 46 B-17's, there were many fires, but one B-17 was lost to enemy fighters.

Tactical Lessons Learned in the Campaign

This account concludes with a summary of tactical lessons learned in the conflict for Tunisia, as set forth in the Northwest African Tactical Air Force *Report of Operations in the Tunisian Campaign* (Paragraph 1, pp. 13-14):

Cooperation with U. S. forces:

1. U. S. and British air forces can work closely together on operational tasks, and units are interchangeable.
2. With mixed U. S. and British air forces it is desirable to have an integrated staff at main headquarters.
3. The trend with U. S. air forces is to make the group the entity; independent squadron identity is suffering in consequence.

4. U. S. tactical reconnaissance squadrons require further training. The tendency to regard reconnaissance as a secondary task is well developed and should be checked in the training stage.
5. The results achieved in close cooperation bombing by the 47th Bomber Group after a short period of training were up to the highest standard of more experienced squadrons.
6. U. S. point W/T communication requires strengthening. Communications in the Tunisian campaign were both erratic and very slow.

Tactics:

1. Despite its wide dispersal, the German Air Force can be demoralized by the sustained bombardment of its airfields.
2. The exploitation of superior equipment as a surprise measure has a most detrimental effect on enemy morale—e. g., the Spitfire IX in the Tunis battle.
3. The fighter-bomber, with experienced pilots, is a most versatile weapon, and can be readily switched to a variety of targets with confidence—e. g., attacks on shipping and field targets.
4. The efficiency of night bombing is materially increased by the use of pathfinder aircraft.
5. Ground signs put out by the land forces are of the greatest help in close cooperation bombing. This applies in all types of country, except where there exists most definite landmarks which cannot be confused.
6. The day bomber formation operating in the battle area is a very great stimulant to the morale of our ground forces.
7. Except in emergency, low-flying strafing attacks by fighters should not be carried out against an enemy until he is suffering some measure of disorganization.

Airfield construction:

1. Operational airfields used by the German Air Force are of a much lower standard than that required by us.
2. Sommerfeld tracking for an airfield is of little value if laid on a normal surface, as the tracking is soon immersed in mud. If laid on a sandy soil the effect is good. The same remarks apply to Pierce Steel Plank.

3. Tracked airfield (Sommerfeld or Pierce Steel Plank) requires considerable maintenance if in constant use.
4. The Tactical Headquarters in the field should be given a measure of control over the aviation engineers or airfield construction groups working on their airfields.

Aircraft:

1. Specialized aircraft—e. g., tank busters—are not an economical striking force. The one tank-buster squadron with the Western Desert Air Force traveled 2,000 miles over a period of four months and operated for approximately one week. By the end of a week the surprise element of their employment had gone and the losses (mostly recoverable aircraft with the pilots unarmed) were very heavy.
2. P–39 aircraft are unsuitable for tactical reconnaissance or as fighters in the battle area.
3. The B–25 is the most acceptable type of tactical bomber for day and night operations with a satisfactory bomb load.
4. The value of the Spitfire IX as a stimulant to morale in fighter squadrons is high.
5. The Ju–87 cannot operate without very heavy casualties in a battle area where a resolute fighter defense is established.

Equipment:

1. The U. S. fragmentation cluster is a most effective weapon.
2. The mobile U. S. operations room (S. C. R.) is a well designed and practicable vehicle and very suitable for its task.

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